User's manual

iStudio

R5976569, current version

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	main issue	update
chapter 1		
chapter 2		
chapter 3		
chapter 4		
chapter 5	add.	
chapter 6		
chapter 7		
chapter 8		
chapter 9		
chapter 10		
chapter 11		
chapter 12		
chapter 13		

new: The corresponding chapters are new or completely revised.
corr.: Passages of the corresponding chapter were corrected; see modification bars.
add.: Passages of the corresponding chapter were added; see modification bars.

This manual refers to following software releases:

iStudio	R1.9.1
Hydra Open Protocol	V1.0

Document history

Modifications, which result in a new version, are indicated by a vertical bar.

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Revision sheet

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Please correct the following points in this documentation (**R5976569**):

page	wrong	correct

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1 Introduction

This chapter explains the structure of the manual itself and the used typographic styles and symbols.

1.1 How this manual is organized

This manual describes the functionality of the iStudio software that serves to operate Hydra, Hydra Compact and Hydra Compact Twin controllers from Barco. (In the following only the term Hydra will be used, which herewith implies Hydra, Hydra Compact and Hydra Compact Twin, as the operation of iStudio does not differ for these devices. If a differentiation is necessary both devices will be mentioned explicitly. If there is a reference to the Hydra user's manual please refer to the Hydra, Hydra Compact or Hydra Compact Twin user's manual, depending on the device you use.) The manual is divided into thirteen chapters:

- **Introduction**
  explains the structure of the manual itself and the used typographic styles and symbols. Safety information is provided concerning the operation of computer systems from Barco.
- **Summary**
  gives an overview about the features the iStudio software.
- **Getting Started**
  describes the hardware necessary to use iStudio and the way Hydra is switched on.
- **Basics**
  introduces the GUI of iStudio and the way of using it and provides additional video related information.
- **Menu and Toolbar**
  explains the whole functionality accessible via menu and toolbar
- **Further GUI Elements**
  lists and explains the operational elements of iStudio not explained in the section below.
- **Error Messages**
  lists all potential error messages of iStudio.
- **Advanced Operation**
  explains data access, upgrading and special configurations.
- **Technical Appendix**
  gives tabular overview about the order codes relying to iStudio.
- **Troubleshooting**
  gives advice, if iStudio can not be properly operated.
- **Appendix A - Hydra Open Protocol**
  provides a reference to the open protocol
- **Appendix B – Hydra Scripting Language Definition v1.0**
  contains the scripting language definition
- **Index**
  gives an overview about the used tables and figures.

Chapters, pages, figures and tables are numbered separately. Chapters are indicated by »point syntax«, e. g. **4.2.3**, pages by a »dash syntax«, e. g. **2-1**, as figures and tables are, e. g. **figure 5-4**.

1.2 Styles and symbols

The typographic styles and the symbols used in this document have the following meaning:

Bold	Labels, menus and buttons are printed in **Bold** font.
Condensed	Links to both other chapters of this manual and to sites in the Internet are printed condensed. In the on-line version of this manual all hyperlinks appear teal.
`Courier`	Names of files and parts from programs are printed in the `Courier` font.
`Courier bold`	Inputs you are supposed to do from the keyboard are printed in **`Courier bold`** font.

↳	**Within a piece of programming code this arrow marks a line, that must be made up in two lines, though meant to be one line.**
	If you do not heed instructions indicated by this symbol there is a risk of damage to the equipment!
	If you do not heed instructions indicated by this symbol there is a risk of electrical shock and danger to personal health!
	If you do not heed instructions indicated by this symbol there is a risk of damage to parts, which are sensitive towards electrostatic charge!
	If you do not heed instructions indicated by this symbol there is a risk to get harmed by sharp objects!
	If you do not heed instructions indicated by this symbol there is a risk that parts may explode!
	If you do not heed instructions indicated by this symbol there is a risk that hot parts impact persons or objects!
	The sheet icon indicates additional notes.
	Next to this icon you find further information.
	This arrow marks tips.
	Next to this icon you find important notes.

1.3 Online manual

On the iSTUDIO documentation CD **R5976593** this manual **R5976569** as well as the HYDRA user's manuals can be found in electronically form. Insert the CD in the CD ROM drive to view the manual. If autorun is enabled on the computer the start page of the CD comes up automatically. Else open the start page **index.html** of the CD manually.

On this start page you will find a link to the user's manual of **iStudio**.

Acrobat Reader can be used to view the file. Adobe® Acrobat® Reader is free and freely distributable software that lets you view and print Adobe Portable Document Format (PDF) files.

If Acrobat Reader is already installed, the manual can be viewed just by a click on the respective link. Else the Acrobat Reader must be installed first. The required installation files can also be found on the CD.

This CD contains also the current iSTUDIO readme file.

2 Summary

This chapter gives an overview about the features of iSTUDIO.

2.1 Properties

iSTUDIO is a complete video, audio and data monitoring system. It typically consists of one or more HYDRA controllers, a visualization system (usually a rear projection Display Wall) and the iSTUDIO software. The HYDRA is controlled via a PC with a standard up to date web browser. The PC is connected to the HYDRA via the LAN. If more sources shall be monitored or if the sources shall be displayed on a bigger display area, multiple HYDRAS may be connected to multiple projection modules of a Display Wall.

iStudio software

The iSTUDIO software enables the operation and control of one or multiple HYDRAS. Multiple video, RGB and audio sources can be monitored on one or multiple projection modules, depending on the number of HYDRAS.

The graphical user interface (GUI) of iSTUDIO has a work area, where video sources, RGB sources, audio sources and other types of information can be arranged. The central concept in the user interface is the object. An object is a rectangular area on the screen on which a video source, audio source or other information (clock, viewer, application, tallies, timer ...) can be displayed. A collection of these objects can be positioned on the display and be saved as a layout. Once a layout is defined it can be displayed on the projection module that is connected to the HYDRA whenever wanted.

The HYDRA with iSTUDIO is able to process external alarms either from hardware GPIO lines or from software signals. Closed captions, XDS, Teletext, wide screen signaling and VITC can be detected and displayed. Additionally an under monitor display (UMD) can be defined and positioned on top or under the video.

Multiple HYDRAS with their connected projection modules can be grouped into a wall. With iSTUDIO the wall can be operated as a single system rather than every HYDRA module individually.

The figure below shows a Display Wall consisting in three projection modules each connected to one HYDRA. These HYDRAS are connected via the LAN to a PC that enables the control of the HYDRAS and their output for the Display Wall by means of the iSTUDIO GUI, available through the web browser. The input sources are connected directly to the HYDRA units.

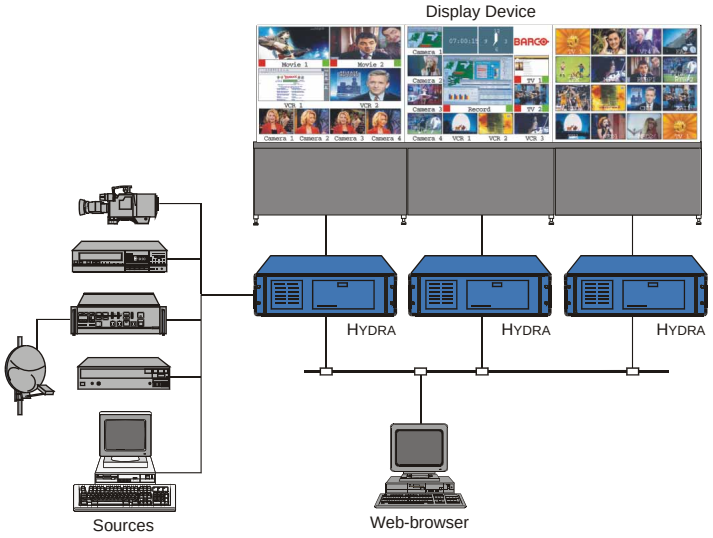


Figure 2-1
Setup with 3 HYDRAS

Hydra

HYDRA is the hardware part of the iSTUDIO system. Different video signals (analog, SDI or HD-SDI, streaming video), RGB data as well as audio sources (analog, digital, embedded or streamed audio meters) can be connected to a HYDRA module. Each HYDRA or HYDRA COMPACT controller or HYDRA COMPACT TWIN section monitors up to 60 / 40 / 12 video sources and up to 112 audio sources (or even more with streamed audio meters of NGM-164) depending on the configuration and displays them on an analog (RGB) or digital (DVI) visualization system. Furthermore the HYDRA processes GPIO input and different kind of VBI. Closed captions, XDS, wide screen signaling and VITC can be detected and displayed.

If the number of displayed sources exceeds the capacity of one HYDRA, or if the sources shall be displayed on multiple displays, multiple HYDRAS can be used. These HYDRAS could easily be operated as one system.

Depending on the system configuration, several SDI video input cards, HD-SDI video input cards, analog video input cards, streaming video input cards, RGB input cards, digital audio cards, analog audio cards and digital or analog output cards can be plugged into the box.

Operator PC

For the operator PC any PC can be used that is connected to the same LAN as the HYDRA devices, as long as a standard web-browser and a Java Virtual Machine are installed on it and it fulfills some minimum system requirements. On the operator PC the GUI of iSTUDIO is accessed. This provides a convenient remote operation of the HYDRAS from multiple locations.

3 Getting started

This chapter describes in short the hardware that enables the operation of the iSTUDIO software. It contains instructions to install and configure the system. It also introduces the usage of multiple HYDRAS.

3.1 Hardware devices

iStudio runs on a Hydra controller and is controlled via the operator PC.

3.1.1 Hydra

The Hydra controller boots from CD ROM. When connecting to the Hydra from a PC within the same LAN, the **select mode** page of iStudio opens and allows the user to log in on the Hydra and to operate the system.

3.1.2 Operator PC

The operator PC is used to connect to the Hydra and by this to the iStudio software. Any PC connected to the same LAN like the Hydra fulfilling the below listed minimum-requirements can be used:

Hardware	
Processor	PC with Pentium II class processor (233 MHz or better)
RAM	64 MB RAM (128 MB recommended)
Screen resolution	1024×768 pixels
Color depth	16 bit
Software	
Operating system	Windows® 98, Windows NT®, Windows® 2000, Windows® XP
Browser	Internet Explorer 5.0 or comparable
Sun Java Runtime Environment	1.4.2.05

Table 3-1
System requirements for the control computer

The iStudio software is best displayed with Internet Explorer; nevertheless it also can be used with any other web-browser supporting Java 2 (Java version 1.3 or better).

Java runtime environment

On the operator PC the Sun Java Virtual Machine must be installed to provide the appropriate Java runtime environment for operation of the iStudio GUI. The installation file is located on the **CD R5976593 Manuals & Supplement**. Insert the CD into the operator PC and make a local copy of the file form the CD-ROM `\3rd party\sun\j2re-1_4_2_05-windows-i586-p.exe`. Start the installation by a double click on the local copy of the file. After a short preparation phase the **InstallShield Wizard** comes up. First you will have to accept the license agreement and then select the setup type. The **Typical** setup is sufficient for this purpose. After that the installation starts and takes some minutes. As soon as clicking on the final **Finish** button, the Java Virtual Machine is available on the operator PC.

To install the Java runtime environment you must be logged in on the operator PC with administrative rights.

3.1.3 Network connection

Make sure the Hydra and operator PC are connected to the same LAN. Details about connecting the Hydra to the LAN can be found in the Hydra user's manual.

3.2 Switching on and off

This section describes how one or more HYDRAS are switched on or off. In addition if a HYDRA is switched on for the first time the network settings must be configured, please refer to section 3.2.3 Adjusting a Hydra to the LAN.

3.2.1 Connecting from a user PC to the Hydra

Switch on the HYDRA as explained in the HYDRA user's manual. Take care that the iSTUDIO CD-ROM is inserted in the CD-ROM drive. When the startup screen appears the HYDRA is ready for operation and a connection from an operator PC to the HYDRA can be set. The default startup screen displays in the upper left corner the IP address of the HYDRA.

Figure 3-1
HYDRA startup screen

Open a web browser on your PC. Type the IP address of the HYDRA into the address bar of the web browser and click the **enter**-key.

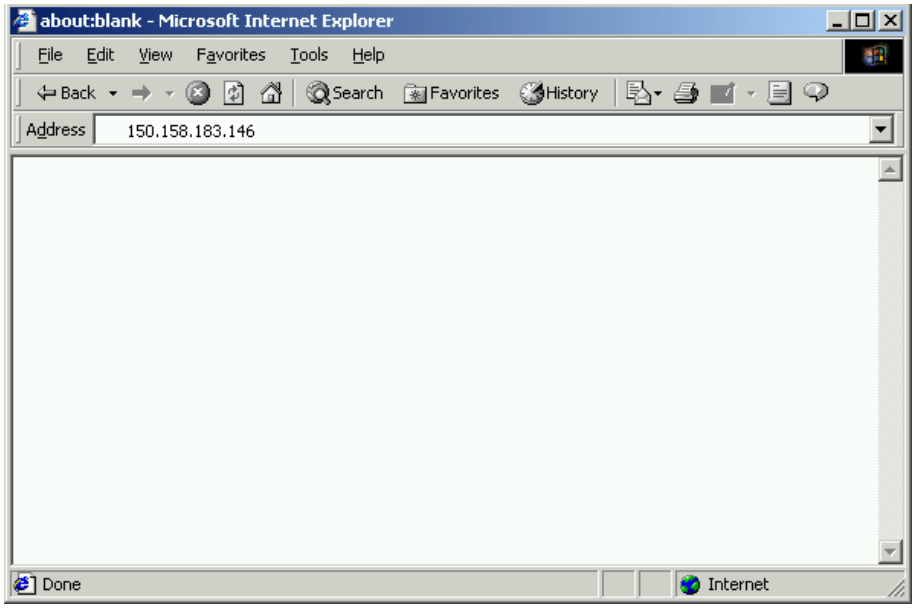


Figure 3-2
Connecting to HYDRA using a web-browser

Once connected to the HYDRA, the initial **select mode** screen of iSTUDIO will appear in the browser.

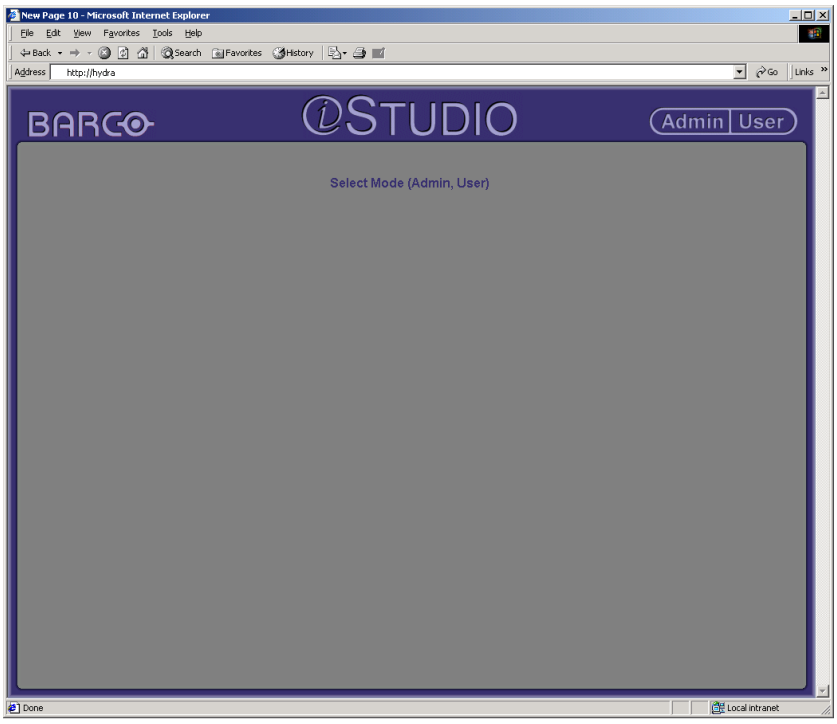


Figure 3-3
iSTUDIO select mode

Click the **Admin** button or the **User** button in the upper right corner to log in, depending on your privileges and intention.

After this a dialog appears that asks, if you want to trust the signed **Barco Java applet**. This applet is only required for the functioning of the show viewer command, please refer to section 5.6.9 Show viewer. We recommend confirming it one time with the **Always** button. This will allow you to use the complete iSTUDIO functionality without asking at each login for confirmation.

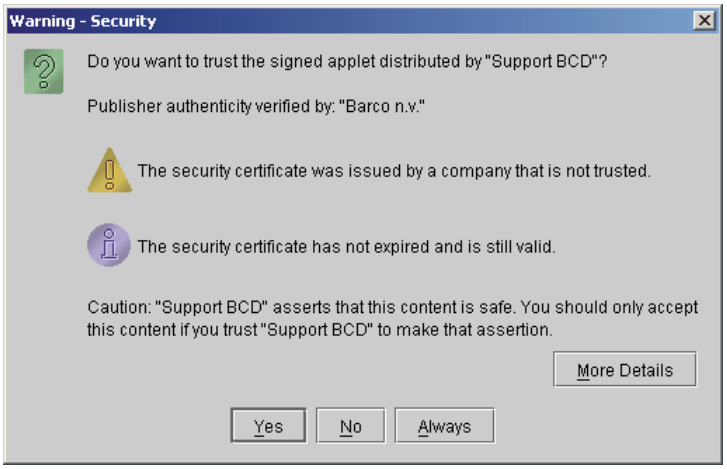

Warning - Security
Do you want to trust the signed applet distributed by "Support BCD"?
Publisher authenticity verified by: "Barco n.v."
The security certificate was issued by a company that is not trusted.
The security certificate has not expired and is still valid.
Caution: "Support BCD" asserts that this content is safe. You should only accept this content if you trust "Support BCD" to make that assertion.
More Details
Yes
No
Always

Figure 3-4
Security warning – Java applet

If you confirmed the Barco applet with **Always**, but later on you want to disable its usage then simply open the Control Panel (click **Start** -> **Settings** -> **Control Panel**). In the Control Panel select **Java Plug-in**, this opens the Java Plug-in Control Panel. Go to the **Certificates** tab and select the **Signed Applet** button. The Barco applet is in the list. Just select it and click the **Remove** button. After doing so you will again be asked at each login for confirmation.

Now the **Login** window is displayed.

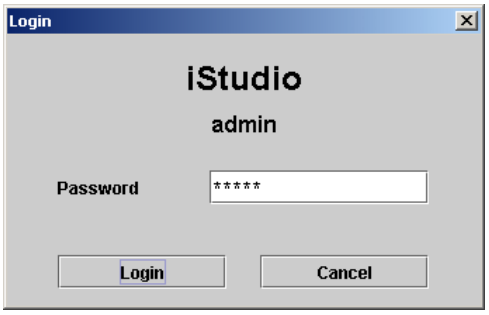


Figure 3-5
Login window

Into the **Password** box insert the required password and click **Login** or press the **Enter** key. Now the iSTUDIO software can be used. The factory set passwords are:

Administrator:	**admin**
User:	**user**

Table 3-2
Factory set passwords

Switching on multiple Hydras

Switch on all HYDRAS with the power button at the front of the HYDRA. Start the iSTUDIO software by connecting to one of the HYDRAS with the web-browser, as explained above. Just one HYDRA can be indicated in the address bar of the browser, but this enables to operate each HYDRA that belongs to the same wall. Within the iSTUDIO software it can easily be switched between all related HYDRAS, please refer to section 6.2.1 Modules.

3.2.2 Switching off

Before the HYDRA can be switched off, it must be halted. To halt a module select **Halt module** from the **Module** menu or select **Halt wall** from the **Wall** menu, see section 5.3.2 Module control and 5.2.5 Wall Control. This command halts one or all HYDRAS. As soon as the HYDRA stops sending an output signal, it can be switched off, please refer to the HYDRA user's manual.

3.2.3 Adjusting a Hydra to the LAN

Before the HYDRA is connected to your LAN, its network settings have to be adapted accordingly. If the HYDRA is already configured to your location you can skip this section.

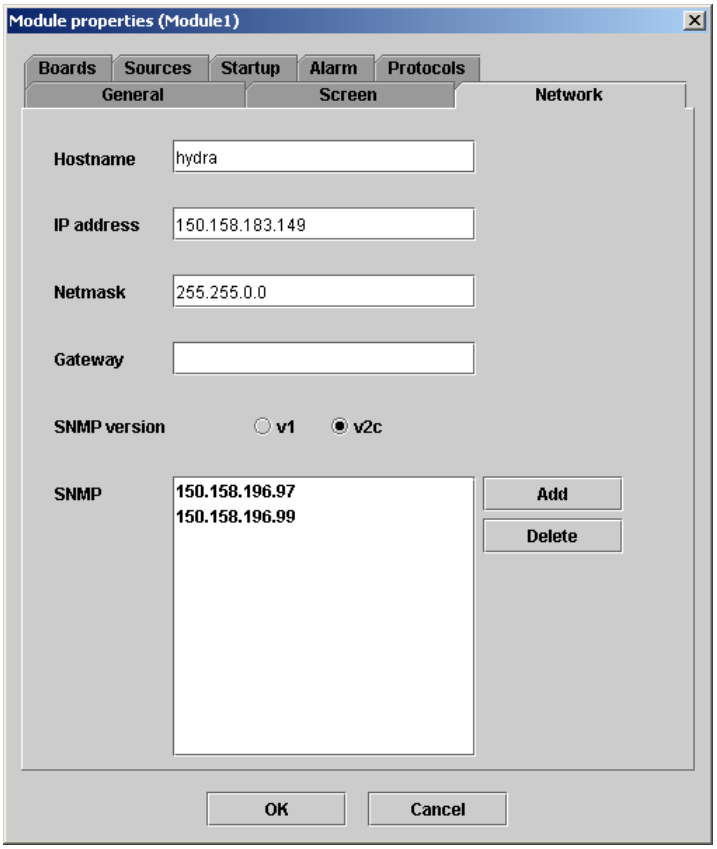
For the configuration you need a crossed network cable to connect a PC to the HYDRA. Please follow the steps below.

- First consult your network administrator to get a valid IP address and hostname.
- Disconnect your PC from the LAN.
- Configure the network settings of the PC in a way that it is suitable for the network settings of the HYDRA, i.e. use the same net mask as the HYDRA and an IP address within the same address range. Below you find the factory set network settings of the HYDRA:

hostname:	**hydra**
IP address:	**150.158.183.146**
net mask	**255.255.0.0**

Table 3-3
Factory set network settings

- Connect the network connectors of the PC and of the single board computer of the HYDRA with a crossed network cable.
- Switch on the HYDRA and connect to it, please refer to section 3.2.1 Connecting from a user PC to the Hydra above. Take care to log in as administrator; you need this to be able to change the network settings of the HYDRA.
- As soon as the iSTUDIO software is operable you can change the network settings of the HYDRA:
  Open the **Module setup** dialog box with the **setup module** command in the **Modules** menu. On the **General** tab you can enter a user defined name for the HYDRA and, if multiple HYDRAS are used in one wall, a wall name. With the **Network** tab the network settings of the HYDRA can be set. Please refer to section 5.3.4 Setup module for a description of these settings.



- Reboot the HYDRA to make the changes become effective. This can be done by the command **reboot module** from the **Module** menu, please refer to section 5.3.2 Module control.
- Disconnect the crossed network cable from the HYDRA and connect the HYDRA to your companies LAN.
- Readjust the network settings of your PC.

If you have to adjust multiple HYDRAS configure them one after the other in the way explained above.

Take care to assign to each of it a unique hostname and IP address!

4 Basics

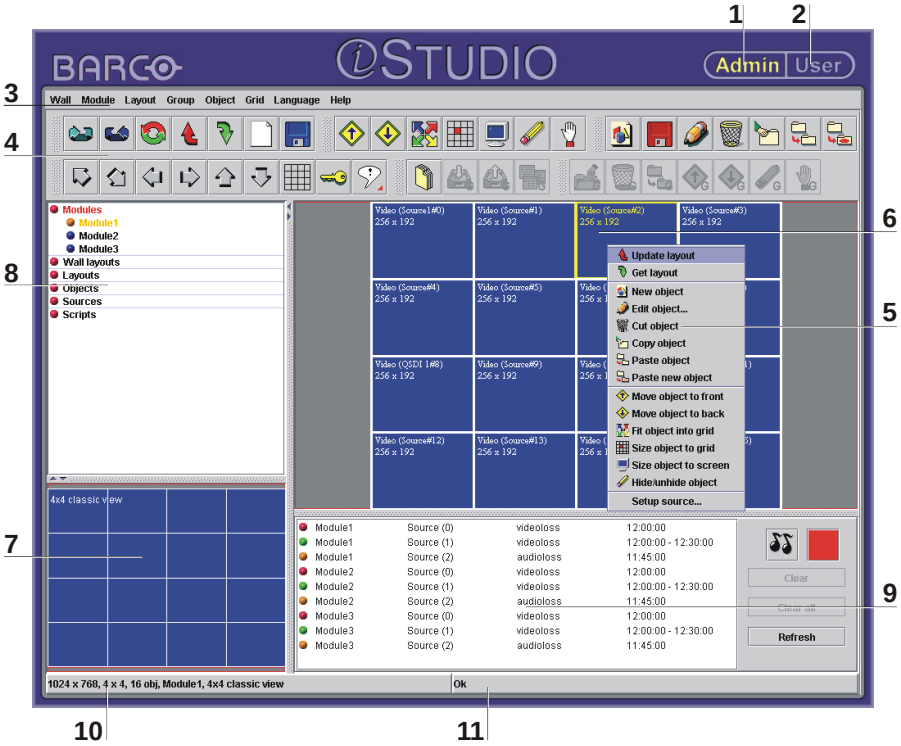
This chapter explains the principles of the iStudio GUI and gives a short introduction in the use of iStudio. An extensive reference to the iStudio software can be found in the chapters 5 Menu and toolbar and 6 Further GUI elements.

4.1 Quick guide to iStudio

This section gives an introduction in the use of iStudio. It explains the user interface and provides a guide to create a first layout and display it on the connected projection module. It is not meant to be complete. Only the most common actions are explained to give an idea how iStudio can be used. An extensive reference to the iStudio software can be found in the next two chapters. They will answer remaining questions.

4.1.1 User interface

The user interface of the iStudio software consists out of up to eleven elements:



Log in buttons

The **Admin** [1] and **User** [2] buttons in the upper right corner serve to easily log in as administrator or as user, see section 6.1 Administrator / user mode.

Menu

The **menu** [3] on top of the user interface provides access to all of the functionality of iStudio. The handling of the menu is explained in detail in the reference in section 5 Menu and toolbar.

Toolbar

The buttons of the **toolbar** [4] make iStudio quick and easy to operate. They are located under the menu. Some of these buttons are toggle buttons to switch from one state to another. They are marked with a red triangle in the lower right corner if switched on. Most of these buttons are a shortcut to a command of the menu, see section 5 Menu and toolbar. Many commands can also be accessed by means of a shortcut key, see section 5.1 Overview of shortcut keys and toolbar buttons.

Shortcut menu

With a right click into the work area or on module-, wall layout- or layout-items in the tree a **shortcut menu** [5] appears. It offers quick access the most important commands in this context.

In the work area this is to switch layouts and to edit the selected object and the source assigned to it. Functionality which is made available with it is explained in the sections 5.3 Modules and source und 5.6 Object.

Within the tree the shortcut menu enables access to actions for wall and modules, wall layout and layouts. This functionality is explained in the sections 5.2 Wall, 5.3 Modules and sources and 5.4 Layout.

Work area

The **work area** [6] in the center and right of the user interface serves to create, rework and inspect layouts. A grid with a variable number of cells can be used to easily position objects. The functionality of the work area is implicitly described in the sections 5.5 Group (selection), 5.6 Object and 5.7 Grid.

Display area

The **display area** [7] on the lower left shows the currently selected module as it is displayed. It displays size and position of the objects, and the state of the source (color code). The **display area** does not serve to edit layouts. Layouts can be edited in the work area. After editing, it can be updated to the module. It is also possible to auto update the content of the work area to the display area, see section 5.3.1 Updating work- and display area.

If the objects that are displayed are already saved as layout, then the name of the layout is in addition shown on the display area. If a layout with unsaved changes is displayed, then an asterisk * is appended to the layouts name.

Tree

The **tree** [8] is between the toolbar and the display area. It lists the connected hardware like HYDRA modules and the sources available on the connected module sources. Furthermore all user-defined layouts and object templates as well as scripts are listed. The **tree** allows to easily select modules and layouts or to assign once defined properties to newly created objects just by a click on the respective entry. A color code shows which items in the list are selected or active. For the tree there are two different views available, see section 6.2 Tree.

Wall alarms

The **wall alarms list** [9] can be toggled on and off, please see also section 5.2.2 Wall alarms area. If displayed, it is located between the work area and the messagebar. If the wall alarms are not displayed, the work area reaches down to the messagebar. The alarm list is a quick and easy tool to handle alarms.

Statebar

The **state bar** [10] provides information of which module is currently used, which layout is loaded on that module, how many objects are on that layout, etc. Please refer to section 6.3.1 Statebar.

Messagebar

The **messagebar** [11] on the lower right side informs the user about the current action on the user interface. If a dialog box is opened, it displays its title. As well it informs about mouse actions on the work area, see section 6.3.2 Messagebar.

Dialog boxes

Dialog boxes are used to show information and to allow users to input or change data and settings. Two types of dialog boxes can be opened:

- **Normal Dialog boxes to control and insert data**
  The iSTUDIO GUI is grayed while such a dialog box is opened and can not be accessed unless the dialog box gets closed. The messagebar displays the title of the dialog box
- **Dialog boxes to start a wall scenario or a wall script**
  The dialog box runs as an individual application. The iSTUDIO GUI remains operable and the title of the dialog box is not displayed in the **messagebar** of iSTUDIO. Though it is displayed in the Windows taskbar.

Movable separators

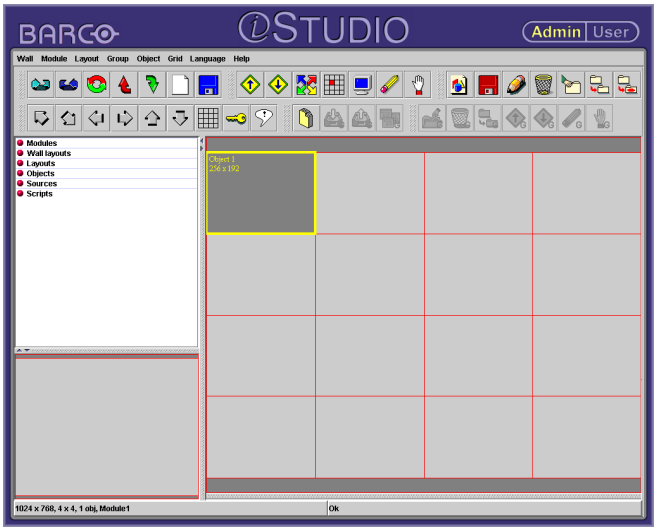
There are movable separators between the major interface elements. Each separator can be dragged with the mouse to change the size of the interface element. By clicking on one of the two arrowheads, the area on one side of it can be completely hidden and the other side is expanded to its maximum size.

4.1.2 Creating objects

Objects play a central role in iStudio. They are visual containers that can display various types of information.

Creating objects

Create a new object on the work area by pressing the **new object** button . The new object will be displayed in the upper left corner of the work area and will not have specific properties. Clicking the **new object** button multiple times creates multiple new objects. They are stacked one on the other in the upper left corner.



Arranging objects

There are multiple ways to size and position objects:

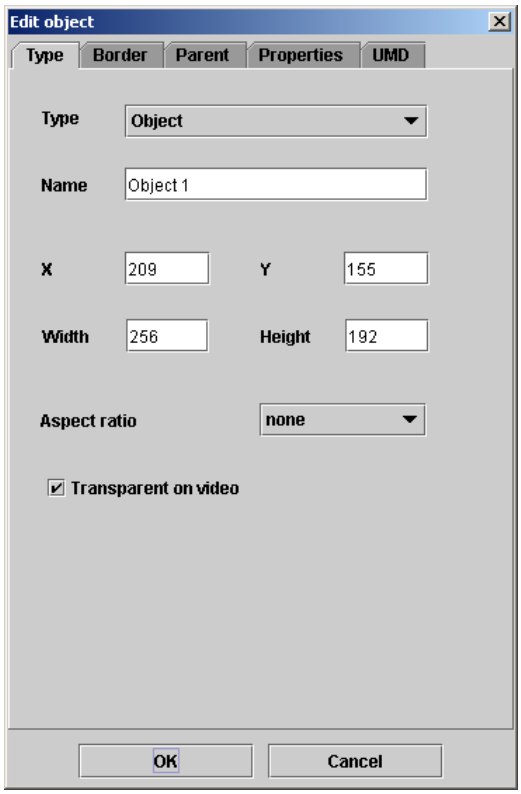
- The object can be dragged with the mouse anywhere within the work area. Its size can be changed by dragging a border or corner of the object. Information about position and size is displayed in the message bar while moved.
- In the **Edit object** dialog box size and position can be indicated in pixels.
- The button enlarges the object to the size of the next bigger grid cells.
- The sizes the object to one grid cell.
- The button enlarges the object to fullscreen.
- With the and button the stacking order of the object relative to the other objects on the work area can be changed.
- The toggle button **fixed movement** adjusts an object to the grid, if moved. The red corner indicates that fixed movement is active.
- The toggle button **lock objects** serves to prevent moving the objects accidentally with the mouse. The red corner indicates that lock objects is active.
- With the undo button and the redo button the last 20 actions can be revoked and restored again.

4.1.3 Defining the object properties

Double click on an object to open the **Edit object** dialog box. Within this dialog box all properties of this object can be set.

Most important is to specify on the first tab the type of the object. **Video**, **Audio**, **Text**, **UMD**, **Tally**, **Logo**, **Clock**, **Timer**, **Stopwatch**, **Alarm**, **Viewer** or **Application** can be selected. The type dependant properties must be set on the **Properties** tab. Here you can select the video source, if you have an object of type video. Please refer also to section 5.6.4 Edit object....

In the work area, the object type and size are displayed in the top left corner of the object. For video objects the source name is also displayed between brackets. When creating a new video object the first available source will automatically be linked to it.



Most of the properties of an object can be saved. Click the red save object button to do this. Object properties can be assigned to another object by multiple ways:

- Once saved, the object properties are available in the tree structure in the **Objects** folder. If you select an object on the work area, and click on an object name in the tree, the saved properties are assigned to the selected object.
- The **cut object** button copies most of the properties of the selected object and deletes the object.
- The **copy object** button copies most of the properties of the selected object without deleting it.
- With the **paste object** button the copied properties can be assigned to another object.
- Alternatively the **paste new object** button creates a new object containing the copied properties.

4.1.4 Group functionality

To ease editing, objects can be grouped to a selection, see section 5.5 Group (selection). This is achieved by switching on the group selection toggle button . Now each object on the work area can be added to the group by a double click on it. A selection allows moving all objects by just moving one of its objects (provided that fixed movement is off). Objects contained in the group are marked with a small square in the lower right corner.

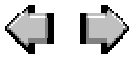
- Objects can be added to (and removed from) the selection by a double click.
- The button adds all objects from the selection.
- The button removes all objects to the selection.
- The button allows drawing a rectangle with the mouse. All objects, which are inside off the rectangle or on its borders, change their state of selection.

If group selection is on, a double click on an object does no longer open the edit object dialog box.

The dialog box can be opened by the menu bar or with the edit object button

When a group selection is made, the selected objects can be operated like a single object. The respective buttons are marked with a **G** in the lower right corner.

4.1.5 Grid

The grid helps to align objects on the screen. The number of grid lines can be increased or decreased using the buttons for  horizontal grid lines, vertical grid lines or horizontal and vertical grid lines.

4.1.6 Displaying objects on the display area and projection module

Up to now the objects are just visible on the work area.

- With the button you can display these objects to the display area and hereby also on the connected projection module.
- If you want to display the arrangement of objects of the display area on the work area the button can be pressed.
- The toggle buttons and activate or deactivate an auto update. Changes on the work area are automatically updated to the display area and projection module.

4.1.7 Layouts

A layout is a collection of objects with their associated properties. Layouts can be saved for later use. Please refer to section 5.4 Layout.

- A layout can be saved with the blue **save layout** button .
- The available layouts are listed in the tree. Click on a layout name to load that layout on the work area.
- With the **new layout** button the work area is cleared and a new layout can be started.
- To display a layout on the projection module it first must be loaded. Then the button must be pressed.

4.1.8 Wall layouts

Using multiple HYDRAS with multiple projection modules, an arrangement of layouts can be made to assign each HYDRA a defined layout. Such a wall layout can be created with the **Wall menu -> New wall layout ...**, see also section 5.2.1 Wall Layout. The command **Load wall layout ...** in the same menu or a **wall layout** item of the tree can be used to bring a wall layout to the projection modules.

4.2 Additional video related input

The HYDRA and iSTUDIO is able to detect and display video related information such as closed caption (CC), teletext (TT), extended data structure (XDS), vertical interval time code (VITC), wide screen signaling (WSS) and video index information coding (VLI) and embedded audio. Furthermore GPIO's can be processed and LTC can be used for genlock. Under monitor displays (UMD) can be displayed in video windows. The following sections explain the way the respective input is used by iSTUDIO. Please refer to the HYDRA user's manual, to see which input card supports which of the below features.

4.2.1 Closed caption

Closed captions (CC) are captions that are hidden in the video signal. The HYDRA can detect closed captions and display it in the video window. An indicator can be activated to show, if a closed caption is available or not. On the **Properties** tab **– VBI** subtab of the **Edit object** dialog box, see section 5.6.4 Edit object..., one of the closed caption channels can be selected for displaying and the other above mentioned settings can be set.

When displaying CC please consider the following:

- Audio bars are always placed on top of the CC information.
- The video window must be sufficiently big to display closed captions.
- If the video window is small, all italic CC text is displayed as plain text.
- Some seldom-used features of CC like flashing and special character sets are not supported.

4.2.2 Teletext

Teletext subtitles of a video source and an indictor showing the availability of teletext can be displayed. Please see section 5.6.4 Edit object... (**Properties** tab **– VBI** subtab).

4.2.3 Vertical interval time code

The VITC signal of a video source can be displayed if a signal is available. Please see section 5.6.4 Edit object... (**Properties** tab **– VBI** subtab).

4.2.4 WSS, VLI, AFD and ETSI

If available in the signal, WSS and VLI information can be displayed in the video window, see section 5.6.4 Edit object... (**Properties** tab – **WSS** subtab). AFD or ETSI lines can be indicated and displayed. WSS and VLI require the UK region to be selected in the Module properties dialog box, see section 5.3.4 Setup module.

4.2.5 Tally

A tally is a status indicator that can visualize one of many system states. Some examples are alarm visualization, hardware GPIO state, software trigger (XML command), etc. Two tallies can be displayed per video window. In addition a tally object is able to display up to 16 freely selectable tallies. Please refer to section 5.6.4 Edit object... (**Edit object** dialog box – **Properties** tab (of a video object) – **Tally** subtab and **Edit object** dialog box – **Tally** tab (of a tally object)). The configuration of the tallies is explained in section 5.3.7 Setup source (**Setup Source** dialog box – **Tally** tab).

4.2.6 XDS

XDS information contains the program name and the program rating. This information can be displayed. For this purpose the second line of the UMD is used. Therefore XDS must be activated and the UMD must be configured respectively, see section 5.6.4 Edit object....

4.2.7 UMD

The UMD can be used to display a name on a label of the video source, see section 5.6.4 Edit object... (**Edit object** – **UMD** tab).

4.3 System performance optimization

4.3.1 Performance

iSTUDIO is, just as any other product, susceptible to performance limitations imposed by the different technologies used. Practical experience has shown that iSTUDIO will perform well under almost all circumstances. Factors that have been recognized to influence system load to a high extend are the amount of API calls and the fonts that are used.

API calls

If API calls are used, we advise to not exceed their number to more than 20 calls per second and to carefully select the used API calls.

In case of doubt contact the Barco support for further information on which approach to follow for achieving the best performance possible, please refer to section 10.1 Hotline.

True Type fonts

The extensive use of TrueType fonts is at the expense of the performance of the system, as True Type fonts require more processing power than other fonts. We recommend to take this into consideration when selecting fonts.

Network load

When multiple HYDRA modules work together in a wall configuration, make sure that the network segment to which the modules are connected is not loaded too much.

4.3.2 Japanese fonts

To show Japanese fonts in the iSTUDIO GUI Windows as well as the Internet Explorer must be set to support Japanese characters.

To display Japanese characters by the HYDRA, in the dialogs of the user interface, where text is edited the font **Mincho** or **Gothic** must be selected!

5 Menu and toolbar

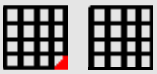
The menu bar provides access to almost all the possible operations within iStudio. Commands that are often used can also be accessed using the buttons on the tool bar. A small icon on the left of the menu entry on the respective command will indicate this. The most important commands are also accessible by means of shortcut keys.

5.1 Overview of shortcut keys and toolbar buttons

Access to almost all operations is provided by the menu; nevertheless, often used commands can also be accessed by the buttons of the toolbar or by the shortcut keys.

The following table lists these buttons and the available shortcut keys, with a reference to the section where they are explained in detail.

Button	Shortcut key	Description	section
general			
		undo	5.6.1 Undo and redo
		redo	5.6.1 Undo and redo
Module			
	Ctrl+A	auto update active/not active	5.3.1 Updating work- and display area
	Ctrl+U	update layout	5.3.1 Updating work- and display area
	Ctrl+G	get layout	5.3.1 Updating work- and display area
Layout			
	Ctrl+N	new layout: clears the work area	5.4.1 Module layout
		save layout	5.4.1 Module layout
Positioning Objects			
	Ctrl+F	move object to the front	5.6.6 Stacking order of an object
	Ctrl+B	move object to the back	5.6.6 Stacking order of an object
	Ctrl+T	Fit object to the grid	5.6.8 Object sizing
	Ctrl+S	Size object to grid	5.6.8 Object sizing
	Alt+S	Size object to screen	5.6.8 Object sizing
	Ctrl+H	Hide/unhide object	5.6.7 Hide/unhide object
Source			
	Alt+F	freeze/unfreeze source: refers to the source of the selected object	5.3.8 Freeze, unfreeze source

Edit Objects			
	Ctrl+O	create a new object	5.6.2 New object and fill grid
		save the properties of the selected object	5.6.3 Load, save or delete objects
	Ctrl+E	edit the properties of the selected object	5.6.4 Edit object...
	Ctrl+X	copy the properties of the selected object and delete the object	5.6.5 Cut, copy, paste and paste new object properties
	Ctrl+C	copy the properties of the selected object	5.6.5 Cut, copy, paste and paste new object properties
	Ctrl+V	paste the copied properties in the selected object	5.6.5 Cut, copy, paste and paste new object properties
	Alt+V	create a new object with the copied properties	5.6.5 Cut, copy, paste and paste new object properties
Grid			
		decrease grid by one cell in **x**- and **y**-direction	5.7.9 Increasing and decreasing the grid
		increase grid by one cell in **x**- and **y**-direction	5.7.9 Increasing and decreasing the grid
		decrease grid by one cell in **x**-direction	5.7.9 Increasing and decreasing the grid
		increase grid by one cell in **x**-direction	5.7.9 Increasing and decreasing the grid
		decrease grid by one cell in **y**-direction	5.7.9 Increasing and decreasing the grid
		increase grid by one cell in **y**-direction	5.7.9 Increasing and decreasing the grid
	Ctrl+2	2 by 2 grid	5.7.8 Standard grid configurations
	Ctrl+3	3 by 3 grid	5.7.8 Standard grid configurations
	Ctrl+4	4 by 4 grid	5.7.8 Standard grid configurations
	Ctrl+5	5 by 5 grid	5.7.8 Standard grid configurations
Moving Objects and Wall Alarms			
	**Ctrl+M**	fixed movement active/not active: objects are aligned to the grid when moved	5.7.1 Fixed movement
	Ctrl+L	lock objects active/not active	5.7.2 Lock objects
		display wall alarm messages in the work area	5.2.2 Wall alarms area

Selection (Group)			
	Alt+G	group selection active/not active	5.5.1 Enable group selection
	Alt+A	select all objects	5.5.2 Selecting objects
	Alt+U	deselect all objects	5.5.2 Selecting objects
	Alt+O	select objects by means of the mouse	5.5.2 Selecting objects
		load objects properties to all objects of the selection	5.5.3 Load, cut and paste object properties
		delete the selected objects	5.5.3 Load, cut and paste object properties
		paste the properties from the copied or cut object to the selected objects	5.5.3 Load, cut and paste object properties
		move selected objects to the front	5.5.4 Stacking order of objects
		move selected objects to the back	5.5.4 Stacking order of objects
		hide/unhide selected objects	5.5.5 Hide/unhide objects
		freeze sources of the selected objects	5.5.6 Freeze, unfreeze sources

Table 5-1
Toolbar buttons and shortcut keys

5.2 Wall

By means of the **Wall** menu, the grid toolbar and the shortcut menus, which appear when clicking on the modules main entry and on the Wall layouts entries in the tree, the wall settings can be accomplished and general administration can be done.

If multiple HYDRAS are used to control multiple projection modules all these HYDRA modules can be controlled by one iSTUDIO terminal. Therefore the layouts can be combined to a wall layout, which assigns to each projection module a layout. A wall layout is herewith a combination of layouts on multiple projection modules. Also all HYDRAS of a wall can be controlled commonly (halt, reboot, reset, setup time, etc.).

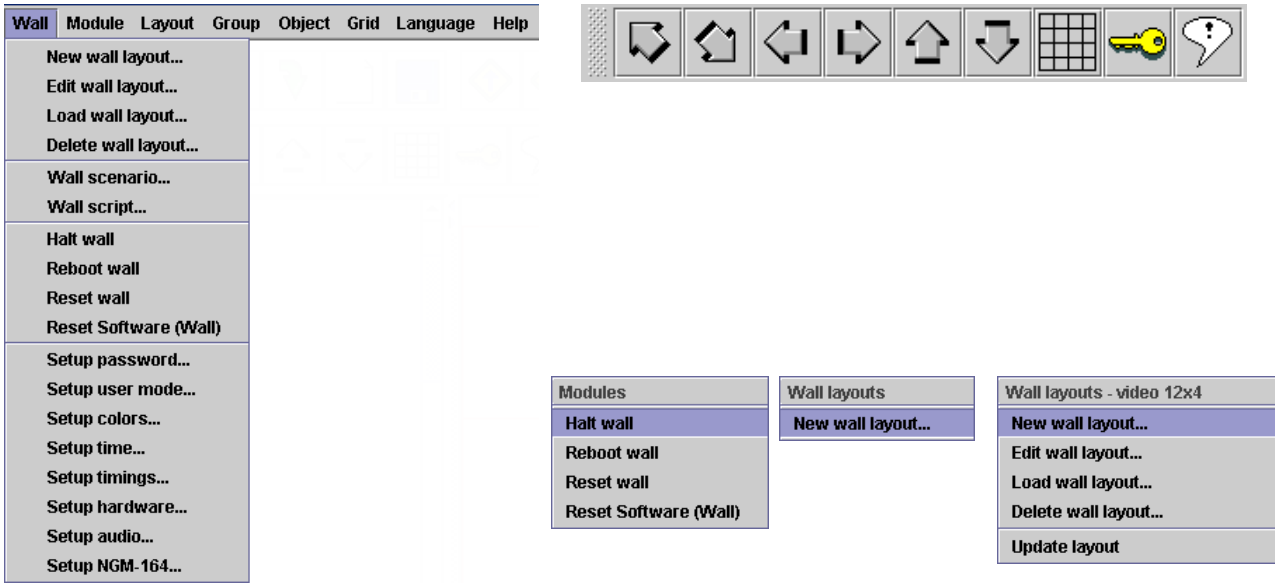


Figure 5-1
Wall menu (left), grid toolbar (top right) and context menus (bottom right): Modules, Wall layouts and Wall layout

5.2.1 Wall Layout

New wall layout...

With the command **New wall layout** a wall layout is created. It opens the **Create wall layout** dialog box.

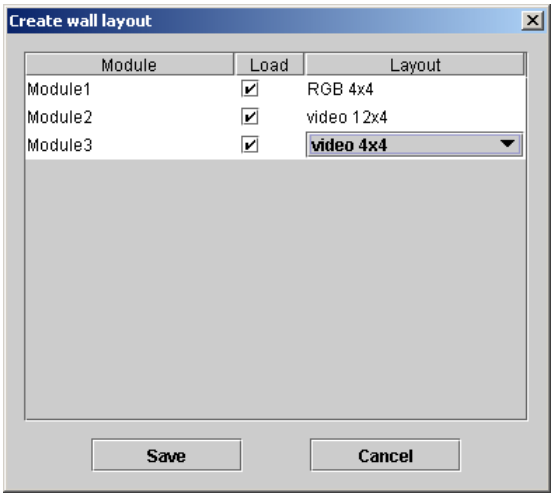


Figure 5-2
Create wall layout dialog box

A list with all modules appendant to the wall can be found in the **Module** column. The **Load layout** checkbox must be selected for each module where a layout shall be assigned. If the **Load layout** checkbox is not selected the respective module becomes not updated when a wall layout is loaded. In the **Layout** list finally an existing layout can be assigned to a module.

After assigning the layouts as desired the wall layout can be saved, therefore click the **Save** button. This opens the **Save wall layout** dialog. In brackets in the title bar of the dialog the available size on the flash disk in KB is indicated. Either enter the name of the wall layout into the **Filename** box or click on a filename in the list to overwrite this existing wall layout. Click **OK** to confirm.

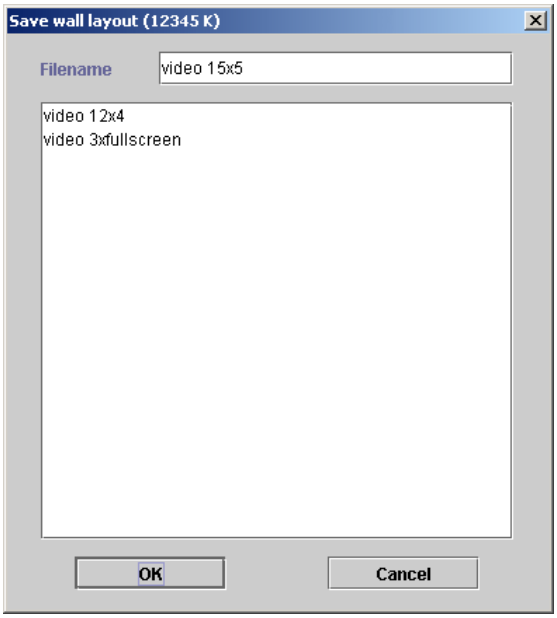


Figure 5-3
Save wall layout dialog box

Edit wall layout...

Already existing wall layouts can also be edited. This is accomplished with the **Edit wall layout** command. The **Edit wall layout** dialog box shows a list of all wall layouts. After selecting one wall layout and clicking **OK**, the same dialog as under the **New wall layout** appears.

If the currently displayed wall layout is edited nevertheless it must anew be loaded, to display the changes.

Load wall layout...

With the **Load wall layout** command a wall layout can be selected and displayed on the projection modules. The layout of the single modules can be seen in the display area. It can be switched between the different modules by clicking on the respective module in the **modules** tree.

Delete wall layout...

The **Delete wall layout** command enables to delete a wall layout. If the actually displayed wall layout is deleted nevertheless the same information is displayed until another wall layout or layout is loaded.

5.2.2 Wall alarms area

If you switch the **wall alarm** toggle button on, the work area is reduced and the wall alarms area is displayed below it. The **wall alarms area** displays a list with all alarms on all connected modules.

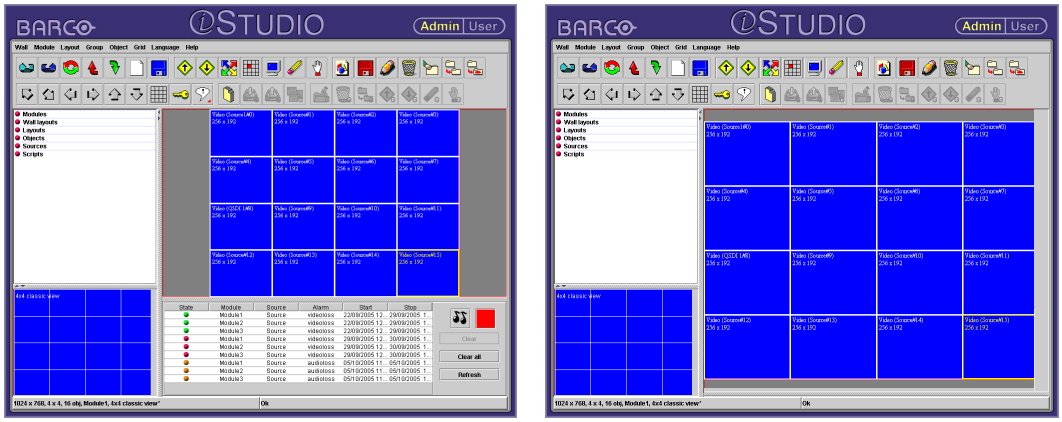


Figure 5-4
Wall alarm list toggled on (left) and off (right)

The list contains the state of an alarm, the module name, source name, alarmtype and start and stop date and time of the occurrence of the alarm.

On the right side of the **wall alarms** list there are five buttons. If the **buzzer** toggle button on the left side on top is switched on, it activates a warning sound in case of an uncleared alarm. The button on the right side on top flashes red, when an alarm occurs. Clicking it stops the button from flashing, without clearing the alarm.

The buzzer and the red flashing button can only be activated by sources, which have the **ring buzzer** property in the **Sources properties** dialog on the **Alarm** Tab enabled, please refer also to section 5.3.7 Setup source**!**

Press the **Clear** button to notify the selected alarm or press the **Clear all** button to notify all alarms. The alarm list is automatically updated, nevertheless the **Refresh** button serves to update changes of modules or sources and to sort the alarms for a better overview. The following colors are used to indicate the state of an alarm:

- **Red:** the error is active, e.g. there is no video or RGB signal detected at a certain source
- **Green:** the error is solved but not cleared, e.g. a video or RGB signal exists again at that source
- **Orange:** the error is cleared. This is a notification of a single error (press the **Clear** button) or of all errors (press the **Clear all** button).

State	Module	Source	Alarm	Start	Stop
	Module2	Source	videoloss	22/09/2005 12:00:00	29/09/2005 12:30:00
	Module1	Source	videoloss	22/09/2005 12:00:00	29/09/2005 12:30:00
	Module3	Source	videoloss	22/09/2005 12:00:00	29/09/2005 12:30:00
	Module2	Source	videoloss	29/09/2005 12:00:00	30/09/2005 12:15:00
	Module1	Source	videoloss	29/09/2005 12:00:00	30/09/2005 12:15:00
	Module3	Source	videoloss	29/09/2005 12:00:00	30/09/2005 12:15:00
	Module1	Source	audioloss	05/10/2005 11:45:00	05/10/2005 12:10:00
	Module2	Source	audioloss	05/10/2005 11:45:00	05/10/2005 12:10:00
	Module3	Source	audioloss	05/10/2005 11:45:00	05/10/2005 12:10:00

Clear
Clear all
Refresh

Figure 5-5
List of wall alarms

Alarms related to video or RGB sources can also be displayed by a flashing window of the respective video object, see section 5.6.4 Edit object... **(Properties – Error).**

5.2.3 Wall scenario

The **Wall scenario** command enables to display various wall layouts in a user-defined chronology. The **Wall layouts** list provides all wall layouts. With the **Add** button a selected wall layout can be added to the **Scenario** list. The **Cut** button removes a selected item from the **Scenario** list. The **New** button clears the whole **Scenario** list. The time each wall layout is displayed can be inserted in seconds into the **Wait** box.

The **Start** and the **Stop** buttons start and stop the scenario. The **Close** button closes the **Wall scenario** dialog box. If a scenario was running at this time it is stopped as well.

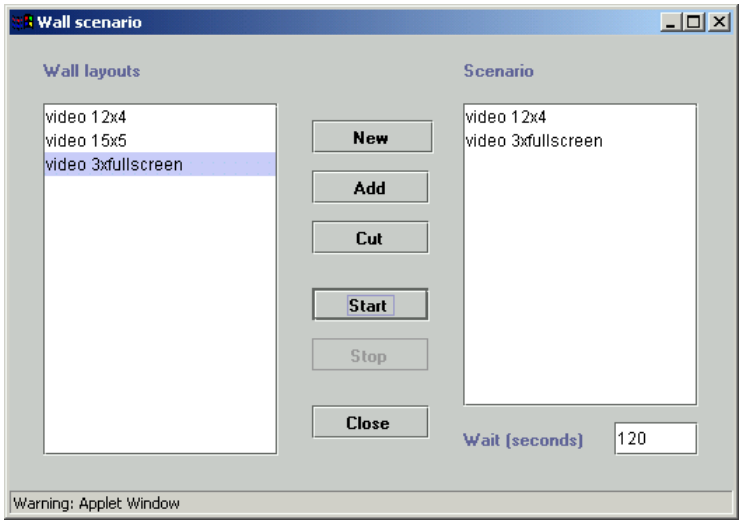


Figure 5-6
Wall scenario dialog box

After starting a scenario the Wall scenario dialog box must be left open as long as the scenario shall be displayed!

Nevertheless the iSTUDIO software can be operated. The Wall scenario dialog box hides in the background. It can be brought to the foreground again either by clicking on its icon in the Windows task bar or by pressing the shortcut key Alt Tab as long as the dialog box is selected.

Wall scenarios can not be saved. To save a sequence of wall layouts a Wall script or the HYDRA open protocol can be used, see below.

5.2.4 Wall script

Wall scripts provide further functionality to control the display of HYDRA and the HYDRA itself. Wall scripts can be started with the **Wall script** dialog box. The same functionality as the scripting language provides the XML based open protocol of HYDRA, which is more convenient than the scripting language and will be supported in further releases of iSTUDIO.

Notice that scripts will not be supported in future releases of iSTUDIO. We recommend to use the XML based open protocol of HYDRA instead.

A reference to the HYDRA scripting language can be found in chapter 12 Appendix B – Hydra scripting language definition v1.0. Usage of the XML based open protocol is content of the chapter 11 Appendix A - Hydra Open Protocol.

The **Wall script** command opens the **Wall script** dialog box. A script can either be newly typed into the **Script** box or an existing script can be opened with the **Load** button. Scripts can be saved by means of the **Save** button. It opens the **Save script** dialog box. The script can be saved under a new name or an existing script file can be overwritten. The **New** button clears the Script window.

The Start button starts the script that is currently displayed in the **Script** box. Messages that arise from the script are displayed in the **Messages** box. Status messages of the script are displayed in the **Output** box. To clear the display of the **Messages** and **Output** boxes the **Clear** button can be used. Pressing the **Stop** button interrupts the script. The **Close** button closes the **Wall script** dialog box and stops also the script.

After starting a script you must leave the Wall script dialog box open as long as you want the script to run!

Nevertheless the iSTUDIO software can be operated. The Wall script dialog box hides in the background. It can be brought to the foreground again either by clicking on its icon in the Windows task bar or by pressing the shortcut key Alt Tab as long as the dialog box is selected.

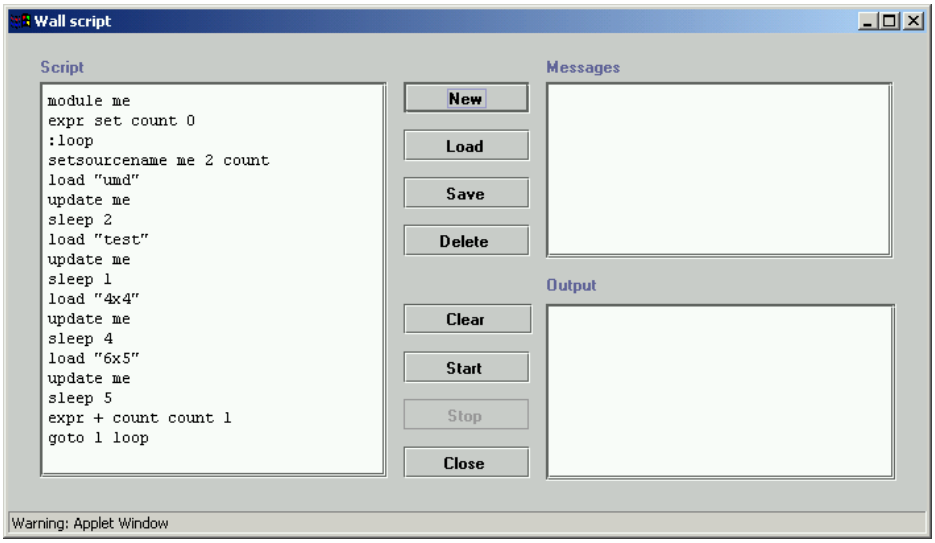


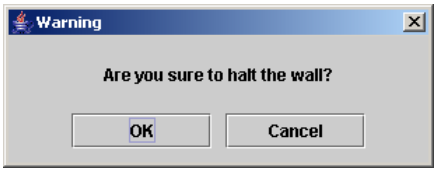
Figure 5-7
Wall script dialog box

5.2.5 Wall Control

The following commands are applied to all HYDRA devices of the wall. Please refer to section 5.3.2 Module control for an instruction how to control a single HYDRA.

Halt wall

With the **Halt wall** command all HYDRAS belonging to the wall can be halted. A warning dialog appears. After confirming this dialog the shutdown screen is displayed while halting. When halted the display is just black and the HYDRAS can be switched off, please refer to the HYDRA user's manual.



Reboot wall

The **Reboot wall** command halts all HYDRA devices of the wall and reboots them. This includes a reset of the software and all hardware components. The warning dialog must be confirmed, before the wall is rebooted.

The command must be applied after changes of **Name** or **Wallname** within the dialog 5.3.4 Setup module to make them become effective. If changes have been made for one module it is sufficient to apply the command **Reboot module** to the respective HYDRA module instead.

Be aware that the connection between the GUI and the HYDRA modules is interrupted while rebooting. You will have to reconnect to the HYDRA when the wall has rebooted!

Reset wall

The **Reset wall** command resets the software and all hardware components of the HYDRA devices of the wall, except the single board computer. The warning dialog must be confirmed, before the wall is reset. If changes have been made for only one module, it is sufficient to apply the command **Reset module** to the respective HYDRA module instead.

Reset Software (Wall)

The **Reset Software (Wall)** command resets the software of the HYDRA devices of the wall. During the software reset, each module keeps on displaying its part on the display wall.

The command must be applied after changes to make them become effective. The following changes are concerned:

- changed content of the folders `logo` and `anim`, please refer to section 8.1 Data structure and data access (reset software is required to update the file lists, e.g. when selecting the logo of a logo object,
- for some NTP synchronization operations, please see section 5.2.7 Time setup.

If changes have been made for one module it is sufficient to apply the command **Reset software (Module)** to the respective HYDRA module instead.

5.2.6 User settings

Setup password...

The **Setup password** command opens the Setup password dialog box. By means of this dialog box the passwords of the administrator and of the user can be changed.

This feature is only accessible for the Administrator.

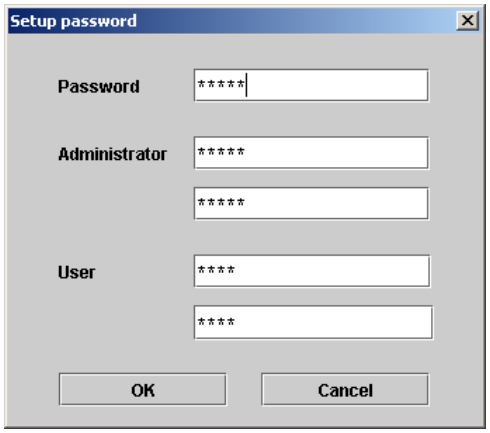


Figure 5-8
Setup password dialog box

Setup user mode...

With the **Setup user mode** dialog box the privileges of the user can be set and changed and the default language after program start in user mode can be chosen.

This feature is only accessible for the administrator.

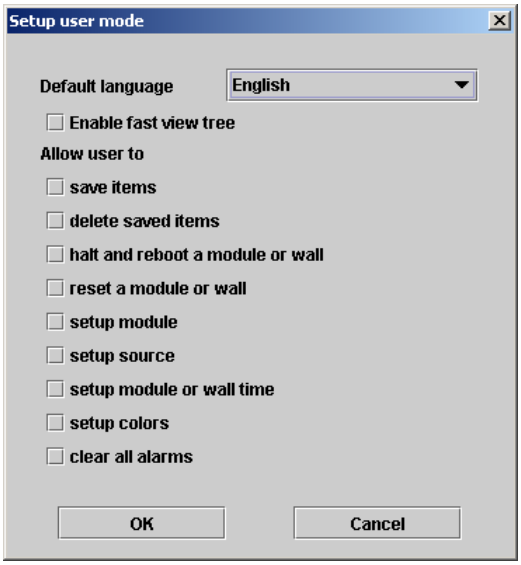


Figure 5-9
Setup user mode dialog box

The options of the Setup user mode dialog box have the following meaning:

Option	Meaning
Default language	default language of the menu for the user mode.
Enable fast view tree	The tree can be switched from standard view tree to fast view tree. Please refer to section 6.2 Tree for the differences between both views. The GUI has to be restarted to make this setting effective.

save items	allows to save objects, layouts and wall layouts
delete saved items	allows to delete saved objects, layouts and wall layouts
halt and reboot a module or wall	allows halting, rebooting, resetting single modules or walls
reset a module or wall	allows resetting single modules or walls
setup module	allows configuring modules
setup source	allows configuring sources
setup module or wall time	allows to set the time of a HYDRA
setup colors	allows to change colors
clear all alarms	allows to clear alarms

Table 5-2
Options of the Setup user mode dialog box

Setup colors...

The iSTUDIO software provides a collection of 14 predefined colors in up to 10 shades and 9 colors (**user1**, **user2**, ..., **user9**) for user definition. These colors can be assigned to the background of a layout or to the background and borders of objects, see the sections 5.4.2 Setup layout and 5.6.4 Edit object.... Furthermore there are colors which are reserved for specific purposes, e.g. to indicate tally states or the amplitude of the audio bars.

With the **Setup colors** dialog box all these colors can be changed. The red, green and blue portion of the color can be adjusted in steps from 0 to 255 either by

- inserting the values directly in the respective text boxes,
- moving the sliders with the mouse or
- clicking with the mouse on the bars and changing the color values in steps of one unit.

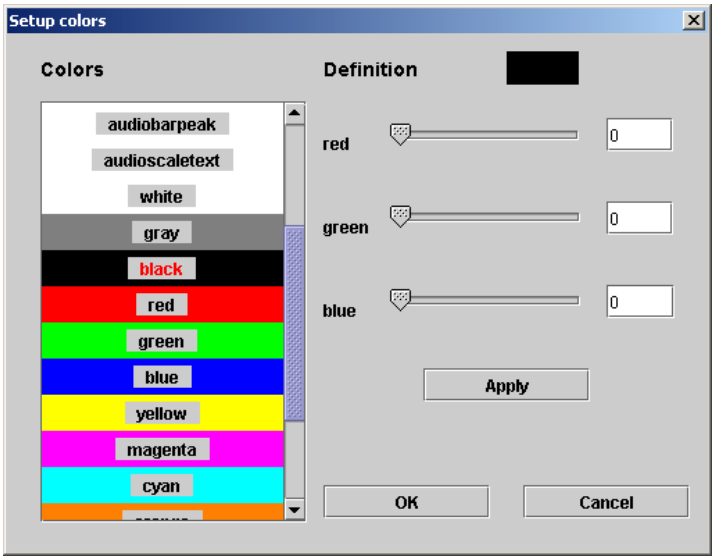


Figure 5-10
Setup colors dialog box

The mixed color can directly be viewed in the **Definition** box on the top of the dialog. To make changes in the color definition effective all related HYDRA modules must be rebooted. The shades of a color are taken linearly.

The following system and user colors are available:

colors	number of shades
white, black, user1, user2, ... user9, purpose related colors	1
red, green, blue, yellow, magenta, cyan, orange, purple, brown, pink, gold	5
gray	10

Table 5-3
Available colors in iSTUDIO

5.2.7 Time setup

Each HYDRA module has an internal clock and thus for each HYDRA module the time can be set. Furthermore the HYDRA modules can be synchronized with each other via an NTP synchronization mechanism. Finally a time zone can be specified. With the **Setup time** dialog box these configurations can be set. It is opened with the command **Setup time**.

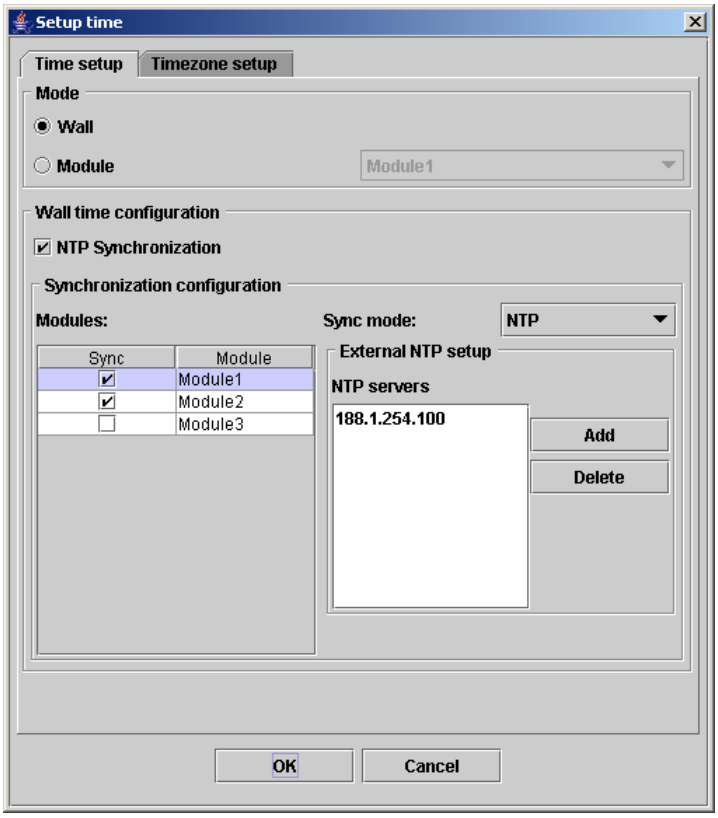


Figure 5-11
Setup time dialog

Time Setup – Wall

On the **Time setup** tab there is first the principle choice between wall and module configuration mode. Selecting the **Wall** mode enables to choose one time configuration for the whole wall. If the **NTP Synchronization** Button is not selected, only the manual configuration is available. With the **NTP Synchronization** Button selected the modes **NTP**, **NTP Date** and **LTCVITC** are available. With the modes **NTP** and **LTCVITC** the modules are furthermore also internally synchronized with each other via NTP. These two modes or selecting **NTP Date** for all modules enables to have for all HYDRA modules always the same time.

With the manual configuration the HYDRA modules are only synchronized each time the time configuration is done, but afterwards the individual clocks might diverge with growing time.

Time Setup – Wall – NTP

Select **NTP** from the **Sync mode** list to synchronize the wall with external NTP servers via the NTP synchronization mechanism. Select in the **Modules** list all HYDRA modules that shall synchronize with one or multiple external NTP servers. Modules not selected in this list will internally synchronize to the externally synchronized modules, which result in the whole wall is synchronized.

Under **NTP server** all IP addresses of the external NTP servers must be listed. Click **Add** to open the **Add NTP server** dialog to add another NTP server to the list, enter its IP address in the text box and click **OK**. To remove an NTP server from the list, select it with a mouse click and click the **Delete** button.

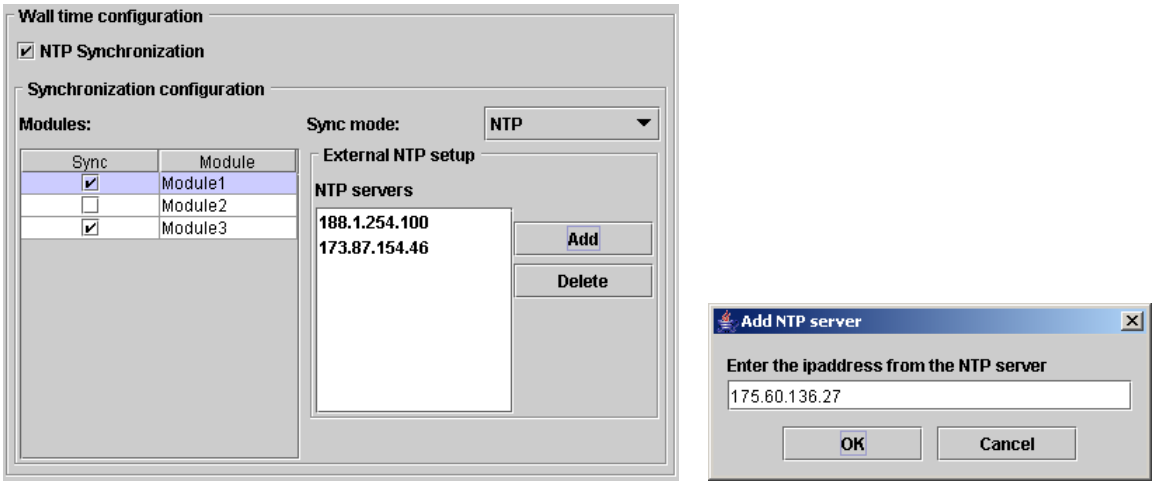


Figure 5-12
Setup time dialog – NTP configuration (detail) and Add NTP server dialog

To check the synchronization, an alarm can be configured to report if the HYDRA module lost its NTP synchronization, please refer to section 5.3.4 Setup module (Alarm tab). It is helpful to have such an NTP alarm for each HYDRA module, if the sync mode is **NTP** (Only NTP not NTP Date).

To initially start NTP synchronization a defined procedure must be carried out.

Once the HYDRA modules are synchronized with each other, special actions have to be taken, if another external NTP server should be used or if you used LTC/VITC configuration before.

Please see the list of procedures below:

First time starting NTP synchronization:

- Enter the NTP settings in the Setup time dialog, see above.
- Apply the command **Reset Software (Wall)**, see section 5.2.5 Wall Control.
- If you have configured NTP alarms for each HYDRA, they will be active.
  Wait until all HYDRA modules that are configured for external synchronization are synchronized. You see this when the NTP alarms of these modules are no longer active.
- Apply the command **Reset software (Wall)** again, now all other HYDRA modules will as well synchronize.
  Also their NTP alarms will be deactivated.

Changing the NTP server:

- Change the NTP settings in the Setup time dialog.
- EITHER switch of the previously configured NTP server.
- THEN wait until the HYDRA modules loose there synchronization. (You see this when the NTP alarm of the modules becomes active)
- THEN within about 5 minutes after the alarms appeared, apply the command **Reset software (Wall)**, see section 5.2.5 Wall Control.
- OR apply the command **Reboot wall**, see section 5.2.5 Wall Control.

Changing the synchronization type of a wall from LTC/VITC to NTP synchronization:

- Change the synchronization settings in the Setup time dialog to NTP synchronization
- Apply the command **Reboot wall**, see section 5.2.5 Wall Control.

Time Setup – Wall – NTP Date

With the sync mode **NTP Date** also an external NTP server is used to get the current time, but the synchronization itself is not driven by an NTP daemon. Instead the HYDRA modules selected in the **Modules** list are actively asking after each time interval (as specified in **Refresh (s)**) the NTP server indicated with **IP address** for the current time. Only the HYDRA modules selected in the Modules list are synchronized. There is no internal synchronization of the modules between each other.

With the **NTP Date** mode, synchronization loops are not taking place as often as expedient. Therefore we recommend using the **NTP** mode instead. This enables to accurately synchronize to a remote NTP server.

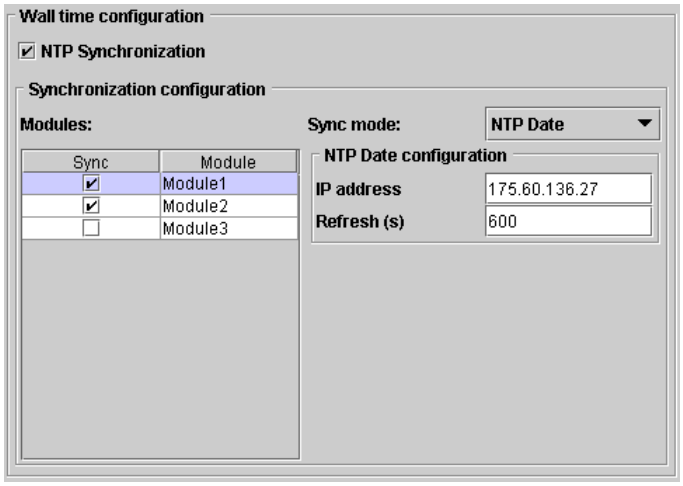


Figure 5-13
Setup time dialog – NTP Date configuration (detail)

Time Setup – Wall – LTCVITC

Apart from NTP signals also an LTC (longitudinal time code) or VITC (vertical interval time code) signal can be used for the external synchronization of the time of the HYDRA wall. Select in the **Modules** list all HYDRA modules that shall synchronize with an LTC or VITC signal. Modules not selected in this list will internally synchronize via NTP to the externally synchronized modules, which result in the whole wall is synchronized.

The signals can be inserted via the D15 connector of the overlay input card. Alternatively also the VITC signal of a video source can be used. The mode list specifies whether LTC or VITC and in which order they shall be used.

- **LTC**: Use only LTC
- **VITC**: Use only VITC
- **LTC + VITC**: Use LTC if available, else use VITC
- **VITC + LTC**: Use VITC if available, else use LTC

For VITC sources additionally their video type **PAL** or **NTSC** must be indicated. In the **Synchronization via** section select **Overlay**, if the source with the synchronization signal is applied to the overlay input card; select **Source** if the VITC of a video source that applies to a video input card shall be used and indicate the respective number of the input.

If multiple HYDRA modules are used for LTC/VITC synchronization then the source that carries the time signal must be applied at the same position (same source number on all concerned modules or on all modules via the overlay input)!

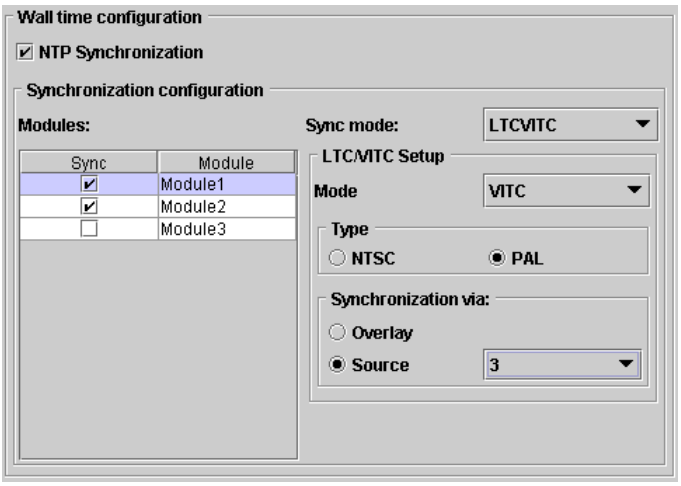


Figure 5-14
Setup time dialog – LTC/VITC configuration (detail)

With LTC/VITC synchronization also the configuration of an NTP alarm for each module is advisable because the modules are synchronized with each other via NTP; please refer to section 5.3.4 Setup module (Alarm tab).

VITC and LTC might allow jumps of the submitted time of maximal 17 minutes. This will bring the system partially out of sync. A HYDRA wall will need about 15 minutes to get synchronized again. The following procedure helps to solve that problem faster:

Using LTC/VITC and a time jump occurs:

- Wait until all HYDRA modules report an NTP alarm.
- Apply the command **Reset Software (Wall)**, see section 5.2.5 Wall Control.

Time Setup – Wall – manual configuration

The manual configuration enables to set the time for the clocks of all HYDRA modules to the date and time specified in the text boxes of the **Manual time configuration** dialog. Pressing the **Get** button shows the current time and date of that HYDRA that is used for the connection to the operator PC. Instead of the Get command, data and time can be entered manually.

Pressing the **Set** button sets the time and date currently displayed in this dialog to all HYDRA modules.

The HYDRA modules are only synchronized with each other in that moment where the **Set** button is pressed; later on their clocks are no more synchronized.

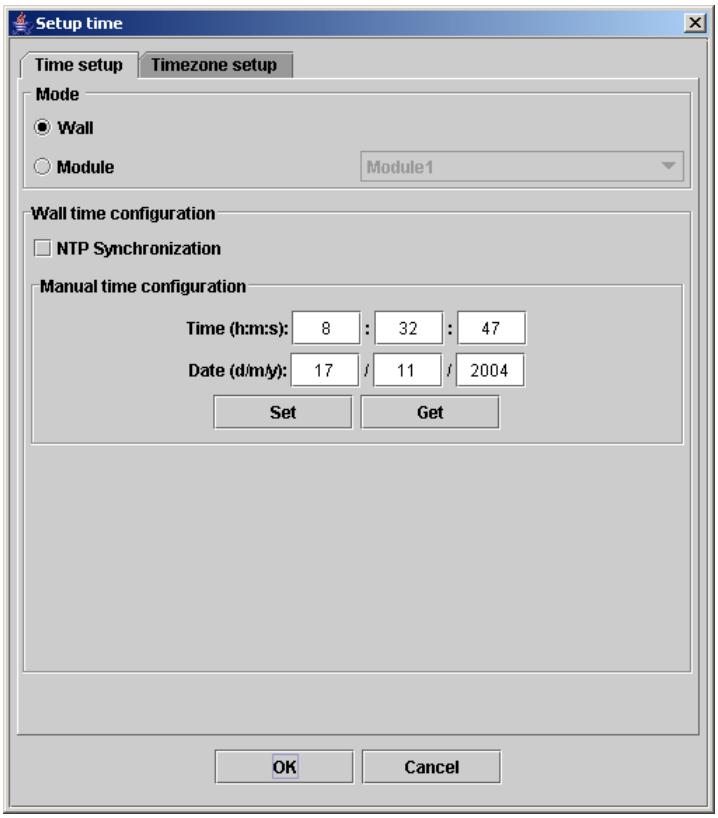


Figure 5-15
Setup time dialog – manual configuration

If the wall or a module has already been operated in a different time configuration mode (NTP, NTP-date or LTC/VITC), then please perform the following steps in the order given below, before switching to manual time configuration:

- Select **Manual time configuration**, which means de-select **NTP Synchronization.**
- Click the **OK** button.
- Perform a software reset for all modules that had a different configuration before; please refer to section 5.2.5 Wall Control or 5.3.2 Module control.
- Open again the **Setup time** dialog.

Now you can perform the manual time configuration as explained above and the time of the HYDRA modules gets set accordingly.

Time Setup – Module

Selecting the **Module** mode enables to choose the time configuration for each module individually. This implies that the modules are not synchronized with each other.

First select the HYDRA module you want to configure from the **Module** list. Then select the synchronization **Mode**. The same modes **Manual**, **NTP**, **NTP Date** and **LTC/VITC** like for the wall configuration can be used. After that choice enter the values in the same way as explained for the time setup of the wall above.

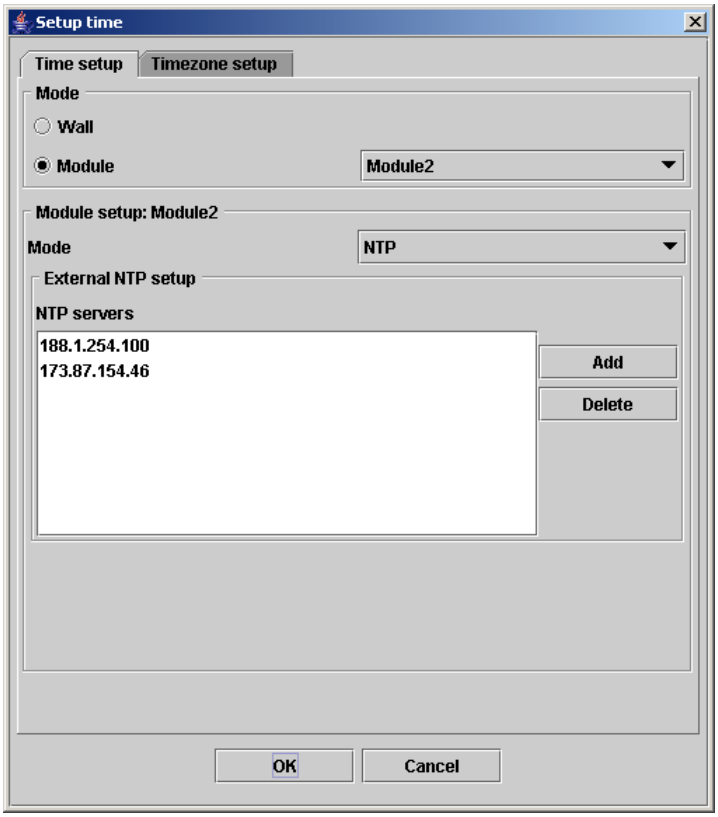


Figure 5-16
Setup time dialog – Module configuration

Other than in **Wall** mode in the **Module** mode, if the time configuration **Manual** is selected, then with **Get** the time of the selected module not of the module connected to the operator PC is displayed.

Timezone setup

On the **Timezone setup** tab the time zone for the whole wall or for an individual module can be set. Therefore select either **Wall** to set one time zone for all HYDRA modules or select **Module** and chose the respective HYDRA module from the list.

To specify your timezone, first the **Timezone** checkbox must be selected, then after clicking the **...** button on the right, the **Select a timezone** dialog appears. With a double click on a purple folder icon, it can be expanded to show the appropriate time files. Select the required time file and click **OK**.

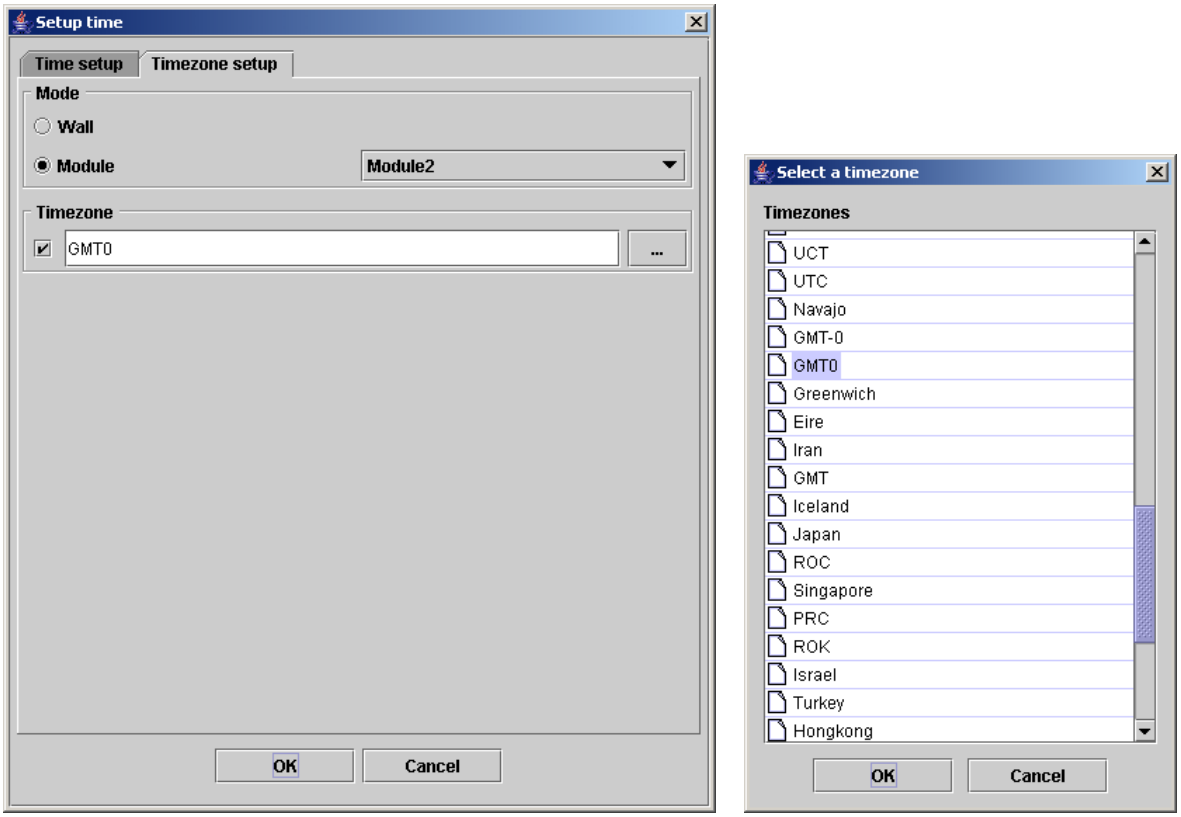


Figure 5-17
Setup time dialog – Timezone setup configuration (left) and Select a timezone dialog (right)

5.2.8 Setup timings

The **Setup timing** dialog allows to define timings or to change the settings of an existing timing. To use these timings please refer to section 5.3.4 Setup module (Screen tab).

The timings list contains all stored timings. Click the **Add** button to add a new timing. In the **Add timing** dialog enter the name of the new timing. If you want to use an existing timing as template, select **Copy from existing timing** and choose the respective timing from the list. Click **OK** to confirm.

Select from the **Timings** list the timing that you want to adapt. The **Split output** setting is used to create a dual timing, refer to section 8.4 Dual mode. When preparing a timing for a device that is not in the timings list the values supplied by the manufacturer must be entered into the upper part of the dialog. When all fields are adjusted click the **Calculate** button, which uses the entered values to calculate all timings settings. They are displayed in the lower part of the dialog. In general these values can be used without further adaptation. But in case that some fine-tuning is required enable the **Edit settings manually** checkbox and adjust the required value manually.

When done, click **OK** to confirm your work.

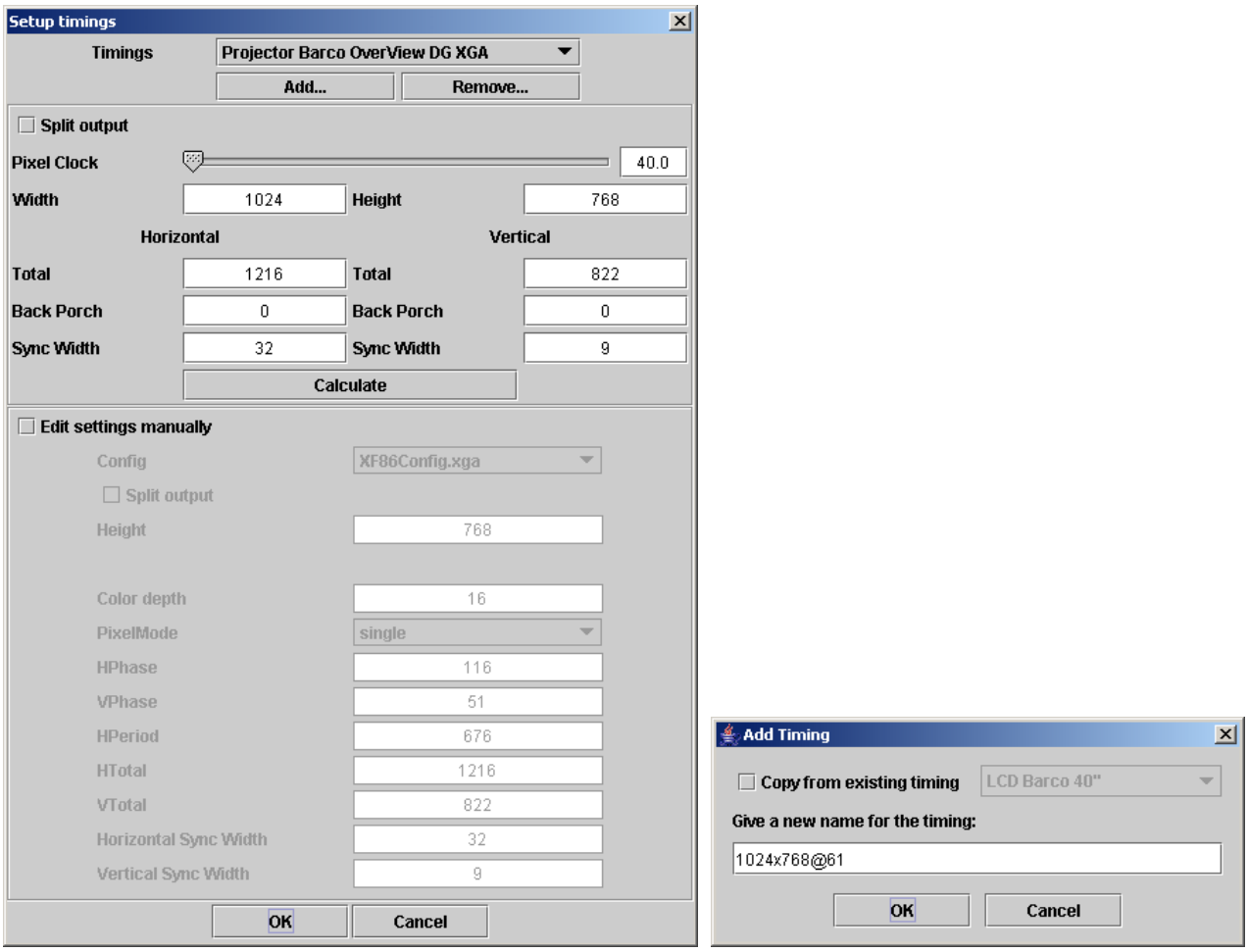


Figure 5-18
Setup timings dialog

5.2.9 Setup hardware

The **setup hardware** dialog serves to re-assign the known configuration of boards and sources after adding or removing boards from the HYDRA or after reordering them.

After each startup the HYDRA checks, if the detected hardware has still the same parameters like before halting it. If it detects differences, it displays in the message bar the text "The hardware configuration has changed" together with the names of the concerned module to notify you from the changes.

On the setup hardware dialog first select one module from the **Modules** list on top. The left column lists now the last saved state of the configuration of the boards of this module. The right column lists the currently detected hardware configuration.

With the mouse you can drag an arrow from an entry of the left side to an entry on the right side. Therefore first click on a box representing a board on the left side, then click in a box on the right side. Only boards of the same type may be linked together in this way. While moving on boards on the right the arrow might have the following colors:

- **green**: the board is of the same type and not yet linked to a saved board
- **orange**: the board is of the same type but already linked
- **red**: the board is of a different type and can not be linked

If you want to release a link, first click in the right box and then click in the free space in the middle between both columns.

A link has the effect that all source settings of the selected board in the left column get assigned to the sources of the selected board in the right column.

When ready click the **OK** button to confirm the new setup.

In addition this dialog can also be used to assign the configuration of one board to another. By this the source properties of one board can be copied.

To make changes effective the command **Reset Software** is required for this HYDRA module; please refer to section 5.3.2 Module control.

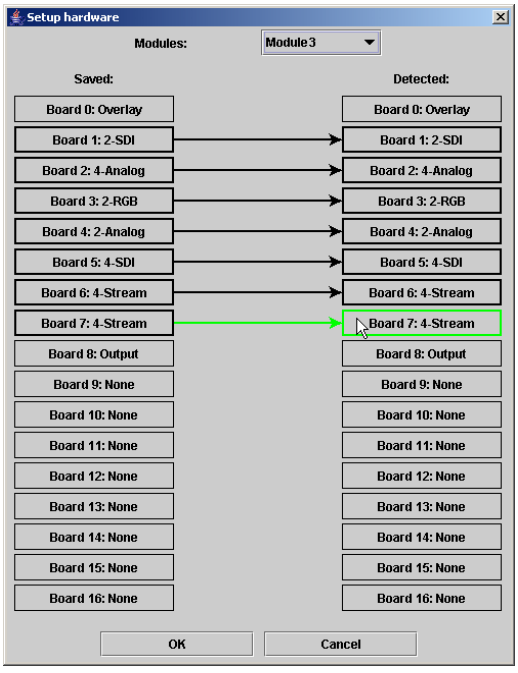


Figure 5-19
Setup hardware dialog

5.2.10 Setup audio...

With the **Setup audio** dialog the transition levels for the individual audio scales can be set. The transition level defines the value at which the audio bar changes its color. Two transition levels exist per audio scale. To change a level, just select a different number from the respective **dBfs** list.

With the **Undo** button the changes of the currently selected audio scale can be revoked. This can be done several times for different audio scales. The default settings for an audio scale can be set in the same way with the **Default** button. Pressing the **Cancel** button revokes all changes made; pressing the **OK** button accepts all changes.

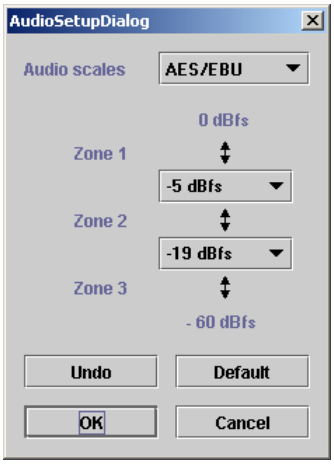


Figure 5-20
Audio setup dialog

5.2.11 Setup NGM-164...

The NGM-164 encodes for up to 64 audio sources audio meters and audio alarms into one compound audio stream. If this stream is available on the network to that the HYDRA connects to, the HYDRA is able to decode the stream and provide the contained audio sources for monitoring.

The **Setup NGM-164** dialog provides access to the configuration of the NGM-164 and allows the configuration of the scales of the audio sources.

A HYDRA is able to receive and process audio streams of multiple NGM-164 devices. For each stream the device and the stream has to be specified. Therefore first enter a name for the NGM-164 into the **Name** field and click **Add**. After that the configuration parameters can be added to the fields in the lower part of the dialog. To delete an NGM-164 configuration, select the device from the list on the left and click **Delete**.

In the **Audio Stream** section the stream itself is configured. In the **Destination** box enter the multicast address of the stream and in the **Port** box the port number for the stream.

In the **NGM-164** section the network settings of the NGM-164 which are needed to connect to the device are listed; in the **Destination** box enter the IP address of the NGM-164, and in the **Port** box enter the port number for connecting.

If the **Enable** checkbox is selected this audio stream is decoded and its sources are considered in the general sources list. As long as the checkbox is deselected the respective audio stream can be defined but it is not used in the HYDRA.

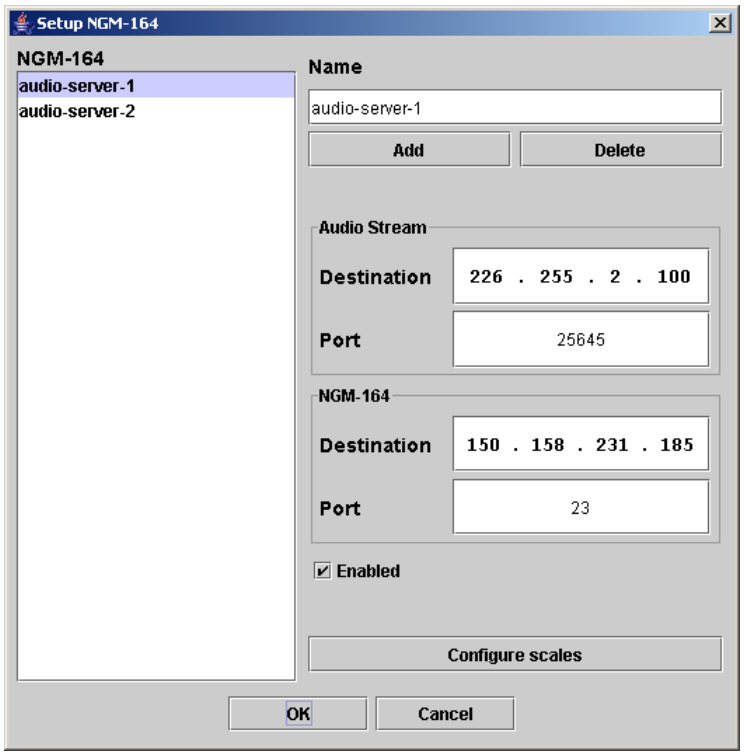


Figure 5-21
Setup NGM-164 dialog

When clicking the **Configure scales** button the **Configure scales** dialog comes up. It serves to configure the used scales for the sources of the selected NGM-164 device.

On the **Configure scales** dialog first click the **Load configuration** button. This starts a communication with the selected NGM-164. Messages about the communication state are displayed in the list at the bottom of the dialog. After a successful connection, the configuration of the audio sources is loaded and displayed in the configuration list on the left. This list shows from left to right the channels in pairs with the used audio scale and the values for the 0 dB Reference (**offset**) and the A/D Reference (**A/D ref**).

To adapt changes to the audio channel pair they first have to be selected. This can be done in different ways: either select them by clicking the checkboxes in front of them or select all channels by clicking the **select all** button. With the **Unselect all** button, all selections can be unmarked. With the **Scale** drop down list a scale type can be chosen and pressing the **Apply** button writes this scale type in the configuration list to the selected channel pairs.

Until now the configuration is only visible in the GUI, clicking the **Set scales** button writes it to the NGM-164, the new configuration is applied. Clicking the **OK** button also writes the configuration of the list to the NGM-164. The **Get scales** button updates the configuration list on the left with the current configuration of the audio channels.

Offset and **A/D ref** are only listed for reference and can not be changed in this dialog, instead the Setup source dialog must be used, please refer to section 5.3.7 Setup source.

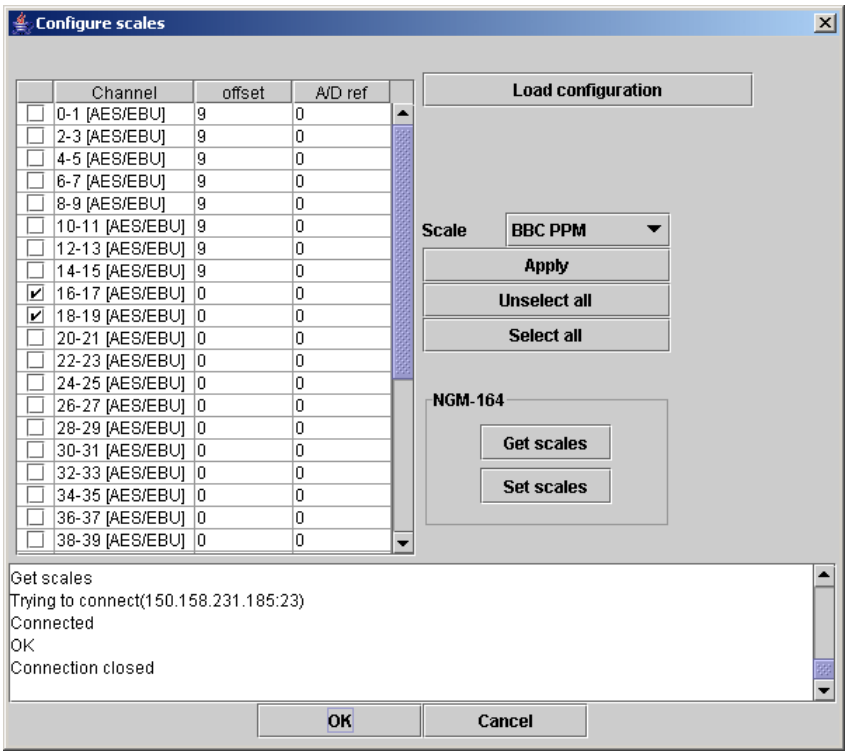


Figure 5-22
Configure scales dialog

Even though the selection of the audio scales is also offered in the edit object dialog, for audio sources of NGM-164 this has to be accomplished in the configure scales dialog of the Setup NGM-164 dialog.

Scale settings from the edit object dialog are not effective for audio sources of NGM-164!

Communication with the NGM-164 is done by means of the NGM-164 network protocol. The reference to this protocol can be found in the NGM-164 user's manual, which is stored on the CD-ROM iStudio Documentation & Supplement R5976593.

5.3 Modules and sources

Properties of the projection modules and of encoders, streams and sources can be set by means of the commands in the **Layout** toolbar and of the **Module** menu or the shortcut menu.

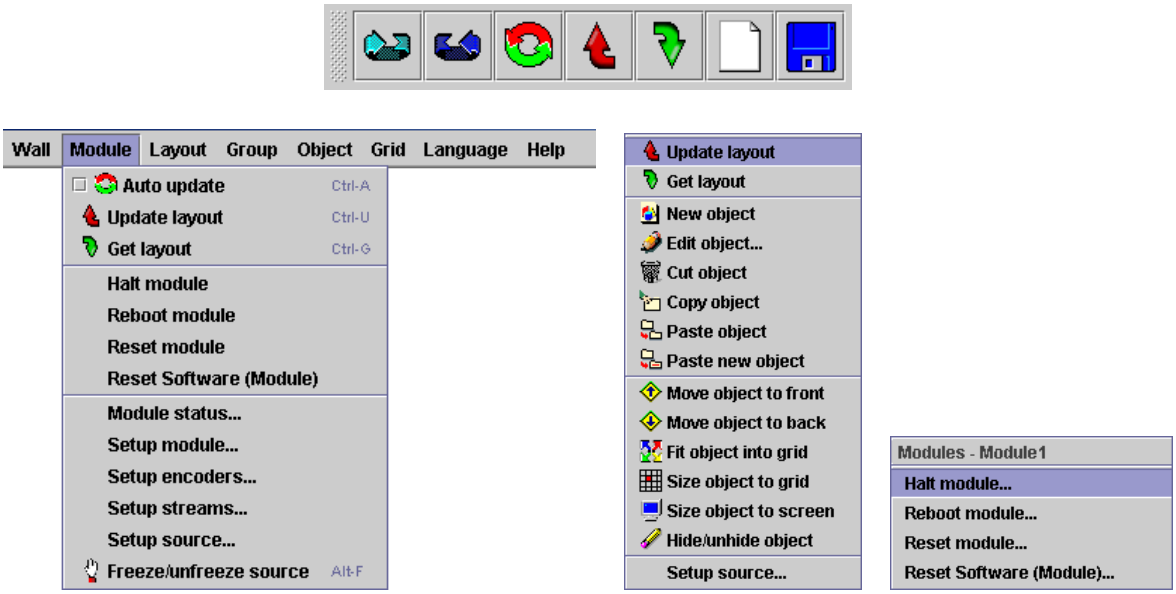


Figure 5-23
Layout toolbar, Module menu and shortcut menus

If multiple HYDRAS are used it must be distinguished between them. This is done by means of the tree, please refer to section 6.2.1 Modules. Clicking on the respective HYDRA name in the tree switches to the respective HYDRA.

5.3.1 Updating work- and display area

Auto update

If the command **Auto update** is selected the layout from the work area is updated to the projection modules reiteratively. This comprises the arrangement of objects and the object definitions. The iSTUDIO software checks if a conflict occurs (e.g. one source is used for two objects) and will display a warning in this case. Clicking **OK** will display the invalid layout anyhow. Clicking **Cancel** will prevent from updating.

This command is also accessible via the button or by pressing the shortcut key **Ctrl+A**.

As long as this command is selected, the command **Get layout** has no use. If changes are done too fast after each other the auto update is sometimes ignored. In this case the command **Update layout** can be used.

Update layout

The command **Update layout** transfers the layout from the work area to the projection modules and to the Display area. This comprises the arrangement of objects and the object definitions. The iSTUDIO Software checks if a conflict occurs (e.g. one source is used for two objects) and will display a warning in this case. Clicking **OK** will display the invalid layout anyhow. Clicking **Cancel** will prevent from updating. If the layout is already saved, then in addition the name of the layout will be displayed on the Display area.

The command **Update layout** is also accessible via the button, the shortcut key **Ctrl+U**.

Get layout

The command **Get layout** transfers the layout from the selected module to the work area.

The command **Get layout** is also accessible via the button or the shortcut key **Ctrl+G**.

If you get a layout from the module to the work area while there are unsaved changes in the layout on the work area, you are prompted to save changes in the layout on the work area.

5.3.2 Module control

The following commands are applied to the selected HYDRA. Please refer to section 5.2.5 Wall Control for an instruction how all HYDRA devices of a wall can be controlled.

Halt module

With the **Halt module** command the selected HYDRAS can be halted. A warning dialog appears. After confirming this dialog the shutdown screen is displayed while halting. When halted the display is just black and the HYDRA can be switched off.

Reboot module

The **Reboot module** command halts the selected HYDRA and reboots it. This includes a reset of the software and all hardware components. The warning dialog must be confirmed, before the HYDRA is rebooted.

The command must be applied after changes of **Name** or **Wallname** within the dialog 5.3.4 Setup module to make them become effective. If changes have been made for multiple modules, it is sufficient to use once the command **Reboot wall** to reboot all HYDRA devices of the wall instead.

Be aware that the connection between the GUI and a Hydra module is interrupted while rebooting. If you connected the GUI to the Hydra that is currently rebooted, you will have to connect anew to the Hydra when the wall has rebooted!

Reset module

The **Reset module** command resets the software and all hardware components of the selected HYDRA except the single board computer. The warning dialog must be confirmed, before the HYDRA is reset. If changes have been made for multiple modules, it is sufficient to use once the command **Reset wall** to reset all HYDRA devices instead.

Reset Software (Module)

The **Reset Software (Wall)** command resets the software of the selected HYDRA. During the software reset, the module keeps on displaying its part on the display wall.

The command must be applied after changes to make them become effective. The following changes are concerned:

- changed content of the folders `logo` and `anim`, please refer to section 8.1 Data structure and data access (reset software is required to update the file lists, e.g. when selecting the logo of a logo object,
- for some NTP synchronization operations, please see section 5.2.7 Time setup.

If changes have been made for multiple modules, it is sufficient to use once the command **Reset software (Wall)** for all HYDRA modules instead.

5.3.3 Module status

The command **Module status...** displays a message window. You can select one of four kinds of status messages from the message list: **Note**, **Warning**, **Error** or **Alarm**. The clear button clears the window such that only new events will be displayed. With **OK** you close the window again. Each line displays a message starting with date and time, when it occurred, continuing with the concerned source or hardware part and finally listing the event.

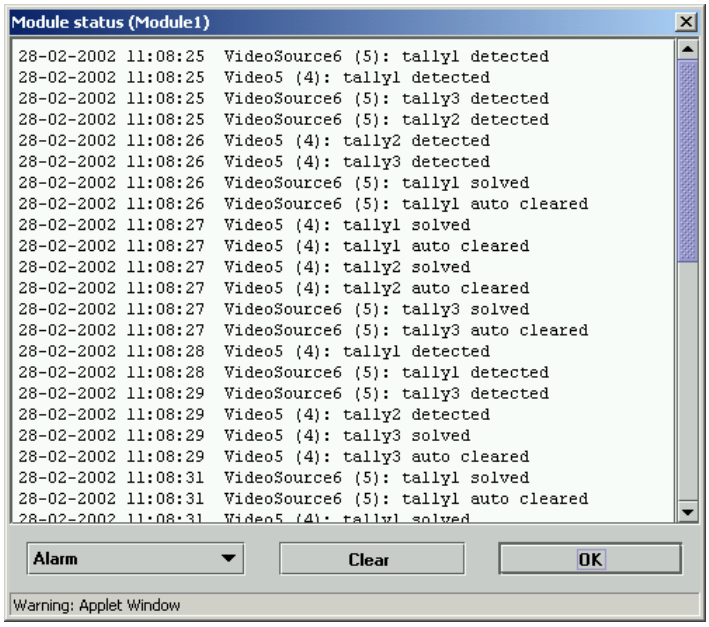

Module status (Module1)
28-02-2002 11:08:25 VideoSource6 (5): tally1 detected
28-02-2002 11:08:25 Video5 (4): tally1 detected
28-02-2002 11:08:25 VideoSource6 (5): tally3 detected
28-02-2002 11:08:25 VideoSource6 (5): tally2 detected
28-02-2002 11:08:26 Video5 (4): tally2 detected
28-02-2002 11:08:26 Video5 (4): tally3 detected
28-02-2002 11:08:26 VideoSource6 (5): tally1 solved
28-02-2002 11:08:26 VideoSource6 (5): tally1 auto cleared
28-02-2002 11:08:27 Video5 (4): tally1 solved
28-02-2002 11:08:27 Video5 (4): tally1 auto cleared
28-02-2002 11:08:27 Video5 (4): tally2 solved
28-02-2002 11:08:27 Video5 (4): tally2 auto cleared
28-02-2002 11:08:27 VideoSource6 (5): tally3 solved
28-02-2002 11:08:27 VideoSource6 (5): tally3 auto cleared
28-02-2002 11:08:28 Video5 (4): tally1 detected
28-02-2002 11:08:28 VideoSource6 (5): tally1 detected
28-02-2002 11:08:29 VideoSource6 (5): tally3 detected
28-02-2002 11:08:29 Video5 (4): tally2 detected
28-02-2002 11:08:29 Video5 (4): tally3 solved
28-02-2002 11:08:29 Video5 (4): tally3 auto cleared
28-02-2002 11:08:31 VideoSource6 (5): tally1 solved
28-02-2002 11:08:31 VideoSource6 (5): tally1 auto cleared
Alarm
Clear
OK
Warning: Applet Window

Figure 5-24
Module status dialog

Note	Information about the current configuration as well as operational messages.
Warning	Information about a non-standard configuration or a wrong hardware configuration of the HYDRA (E.g. no output cards are present).
Error	Information about internal failures of the HYDRA system software.
Alarm	Information about failures of used components like fan/power failure or missing input sources.

An overview about possible event messages can be found in section 7.2 Device related errors.

5.3.4 Setup module

The command **Setup module...** opens the **Module properties** dialog. By means of this dialog the properties of the projection module and the HYDRA can be set. These are:

- General settings (name, geometry, region, etc.)
- Screen (selection of output signal)
- Network settings of the HYDRA
- Boards (list of all boards used in the HYDRA and additional, type dependent board configuration)
- Connected sources (configuration of the video and RGB sources)
- Startup options
- Alarm settings
- Settings for the use of the Andromeda protocol

Changing the **name** or **wall name** in the HYDRA properties, requires the command **Reboot module** for the concerned HYDRA or **Reboot wall**, if name properties of multiple HYDRAS are changed. Please refer also to section 5.3.2 Module control and 5.2.5 Wall Control respectively.

General tab

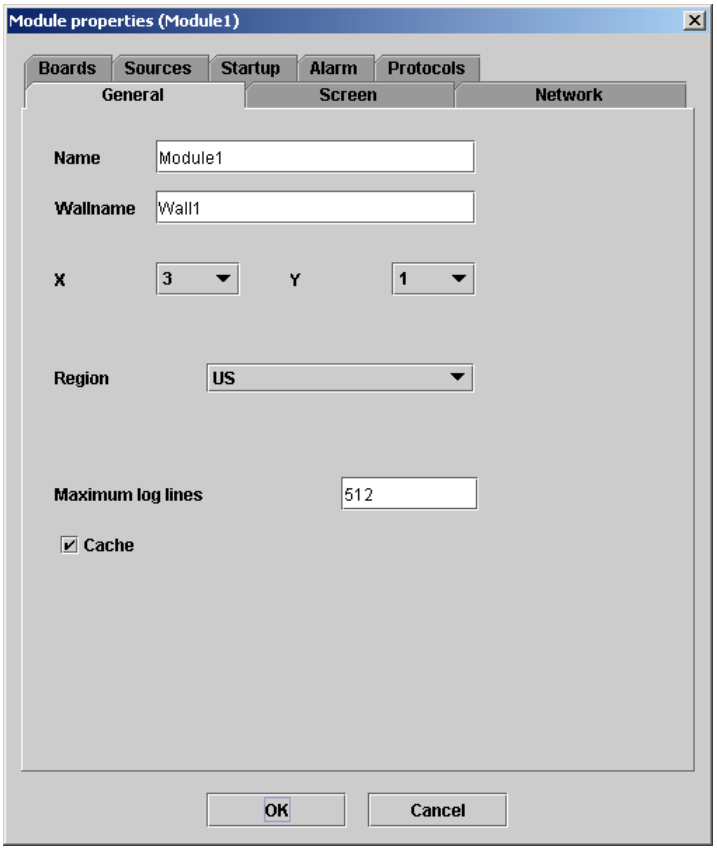


Figure 5-25
Module properties dialog – General tab

On the **General** tab the settings of the projection module must be inserted. Insert a unique module name in the **Name** field. The name of the wall must be typed into the **Wallname** field. Take care to insert for each HYDRA of the wall the same wall name.

With the **X** and **Y** list the position of the projection module within that indicated wall must be specified. The **X** coordinate counts from left to right. The **Y** coordinate counts from top to bottom, seen from in front of the Display Wall.

With the **Region** list some properties that depend on regional video standards can be enabled. These properties are closed captions and XDS for the region **US** and WSS/VLI and AFD for the region **UK**. The regions **Europe** and **Japan** have currently the same effect like the region **US**. The setting of these properties can be found on the **VBI** and **WSS** tab in the **Edit Object** Dialog on the **Properties** tab for a video object, please refer to section 5.6.4 Edit object... .

In the **maximum log lines** box the maximal number of lines in the log file can be determined. A useful amount of lines ranges form 100 to 500 lines. Not more than 2000 lines should be used.

The logged information can be displayed by the **Module status** dialog box, see above.

By means of the **Cache** checkbox the cache used for the active layout can be controlled. If it is not selected, the cache will not be used. This leads to a faster update speed, which is above all helpful with larger walls of multiple display modules.

Screen tab

On the **Screen** tab the format for internal data processing is set. These are usually also the output settings. Anyhow, depending on the output card, also differing output resolution and timing can be set. This is done on the **Boards** tab, please see below.

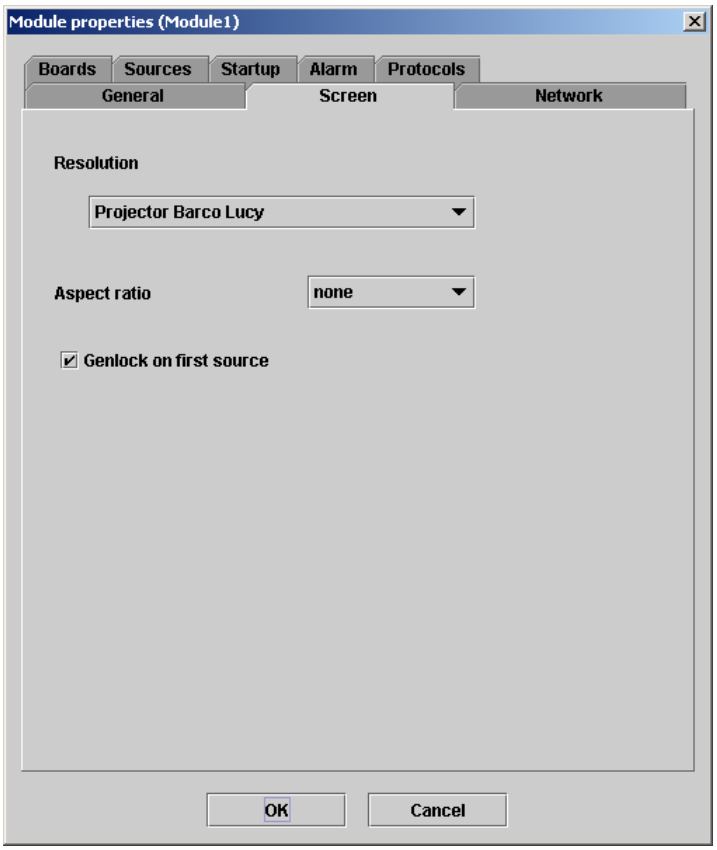


Figure 5-26
Module properties dialog – Screen tab

The **Resolution** list provides a collection of settings, either named after the device, or after resolution and timing itself. Individual timings can be edited by means of the 5.2.8 Setup timings dialog. Dual settings are used, if two projection modules are connected to one HYDRA in dual mode, see section 8.4 Dual mode. For dual mode for display devices with pixel clock higher than 68MHz the appropriate **internal timings** must be used.

Timings for SXGA+ and UXGA resolutions which do not have the word **native** in their name perform pixel doubling. Pixel doubling is explained in section 8.4 Dual mode. Timings with the word **native** in their name process the complete amount of pixel throughout the whole image generating process.

The settings PAL SDI, PAL SDI Dual, NTSC SDI, PAL CVBS, PAL CVBS Dual, NTSC CVBS and NTSC CVBS Dual are especially useful with the DVI video output card; please refer to **Boards** tab below.

Please refer to the following table for the complete list of available settings:

setting	projection module/device/application
Barco devices	
Projector Barco Lucy	OverView-mP50, OverView cPG (XGA)
Projector Barco Lucy Dual	OverView-mP50, OverView cPG (XGA), dual mode
Projector Barco mL	OverView-mL (XGA)
Projector Barco mL Dual	OverView-mL (XGA), dual mode
Projector Barco MaryLou	OverView cPR, S70 (SXGA)
Projector Barco OverView DG XGA	OverView DG (XGA) no genlock on PAL
Projector Barco OverView DG XGA Dual	OverView DG (XGA) no genlock on PAL, dual mode
Projector Barco OverView DG XGA PAL	OverView DG (XGA) enabling genlock on PAL
Projector Barco OverView DG XGA PAL Dual	OverView DG (XGA) enabling genlock on PAL, dual mode
Projector Barco OverView DR SXGA	OverView DR (SXGA) no genlock on PAL
Projector Barco OverView DR SXGA PAL	OverView DR (SXGA) enabling genlock on PAL
Projector Barco OverView DR+ SXGA+	OverView DR+ (SXGA+) usage of pixel doubling
Projector Barco OverView DR+ SXGA+ Native	OverView DR+ (SXGA+) native resolution, only with single board computer/2
Projector Barco OverView DR+ SXGA+ Native 50Hz	OverView DR+ (SXGA+) native resolution @50Hz enabling genlock on PAL, only with single board computer/2
Projector Barco OverView PU UXGA	OverView PU (UXGA) usage of pixel doubling
Projector Barco OverView PU UXGA Native	OverView PU (UXGA) native resolution, only with single board computer/2
LCD Barco Solaris LC40	Solaris LC40
LCD Barco Solaris LC40 Portrait	Solaris LC40 (with rotation module)
LCD Barco Solaris LC40 second edition	Solaris LC40, second edition
LCD Barco LC-42/47 50Hz	LC series 50 Hz timing
LCD Barco LC-42/47 60Hz	LC series 60 Hz timing
3rd party devices	
LCD NEC LCD3000	LCD NEC LCD3000
LCD NEC LCD4000 50Hz	LCD NEC LCD4000 50 Hz; only functional with a firmware change of the display from NEC-Mitsubishi.
Plasma Panasonic TH42PWD3	Plasma Panasonic TH42PWD3
Plasma Panasonic TH42PWD3 Dual	Plasma Panasonic TH42PWD3 Dual, dual mode
Plasma Panasonic TH-50PHD3	Plasma Panasonic TH50PHD3
Plasma Panasonic TH-50PHD3 Dual	Plasma Panasonic TH50PHD3, dual mode
Plasma Pioneer	Plasma Pioneer
Plasma Pioneer PDP503 MXE	Plasma Pioneer PDP503 MXE
Plasma Fujitsu P50XHA10E	Plasma Fujitsu P50XHA10E
Plasma NEC PX-50XM1A	Plasma NEC PX-50XM1A
Plasma NEC PX-50XM3G	Plasma NEC PX-50XM3G
Plasma Selti MPD5010A-01	Plasma Selti MPD5010A-01
Plasma Zenith P50W26B Portrait	Plasma Zenith P50W26B, only applicable with the one channel output card

VESA timings	
VESA XGA 60Hz	
VESA XGA 60Hz Dual	OverView PU (UXGA), dual mode OverView PU (UXGA) native, dual mode OverView DR+ (SXGA+), dual mode, only for digital output of DVI-DVI digital/analog output card OverView DR+ (SXGA+) native, dual mode, only for digital output of DVI-DVI digital/analog output card VESA XGA 60 Hz, dual mode VESA UXGA 60 Hz, dual mode, only for digital output of DVI-DVI digital/analog output card
VESA SXGA 60Hz	
VESA UXGA 60Hz	only applicable with DVI-DVI digital/analog output card at the digital output
Video output	
PAL SDI PAL SDI Dual NTSC SDI NTSC SDI Dual PAL CVBS PAL CVBS Dual NTSC CVBS	not supported
internal timings	only applicable with DVI-DVI digital/analog output card
Hydra Internal 15:9 60Hz	not applicable
Hydra Internal 15:9 60Hz Dual	Solaris LC40, dual mode LCD NEC LCD3000, dual mode Plasma Pioneer, dual mode Plasma Selti, dual mode Plasma Pioneer PDP503MXE, dual mode Plasma Fujitsu P50XHA10E, dual mode
Hydra Internal 9:15 60Hz	not applicable
Hydra Internal 9:15 60Hz Dual	Solaris LC40 Portrait, dual mode
Hydra Internal 5:4 60Hz	not applicable
Hydra Internal 5:4 60Hz Dual	OverView cPR, S70 (SXGA), dual mode OverView DR (SXGA) no genlock on PAL, dual mode OverView DR (SXGA) enabling genlock on PAL, dual mode VESA SXGA 60Hz
Hydra Internal 16:9 60Hz	not applicable
Hydra Internal 16:9 60Hz Dual	Plasma Panasonic TH50PHD3, dual mode Plasma NEC PC-50XM1A, dual mode
LCD Barco Solaris LC40 second edition Dual	Solaris LC40 second edition, dual mode

Table 5-4
Resolution settings of projection modules

If the output resolution of the Hydra gets changed from XGA to SXGA or vice versa, please refer also to section **BIOS setup** in the Hydra user's manual.

If the physical aspect ratio of the display differs from the aspect ratio that is displayed on it this can be committed with the **aspect ratio** list. The following settings can be chosen:

setting	meaning
none	default setting displayed aspect ratio is the same as physical aspect ratio
4/3	displayed aspect ratio is **4/3**
5/4	displayed aspect ratio is **5/4**
16/9	displayed aspect ratio is **16/9**
9/16	displayed aspect ratio is **9/16**

Table 5-5
Settings for the aspect ratio list

The **Genlock on first source** checkbox enables the use of the genlock feature. This locks the refresh rate of the projection module to the refresh rate of the signal of the first video source and thus guarantees a synchronized update, which is especially helpful when displaying videos with slow movement. Not all HYDRA hardware supports this feature.

The following timings support Genlock optimally:

timing	condition
Projector Barco MaryLou	if a PAL source is locked, NTSC sources might not be displayed properly if scaled too much. Note that the settings of the projection module needs to be adapted as well (switch **async** option to **sync**), please see the respective user's manual of the projection module.
Projector Barco Lucy **Projector Barco Lucy Dual**	if a PAL source is locked, NTSC sources might not be displayed properly if scaled too much.

Table 5-6
Genlock

Genlock can only be used, if the overlay input is not used!

Genlock does not work correctly for the following progressive formats of HD-SDI:

1080/30P, 1080/29.97P, 1080/24P, 1080/25P, 1080/23.98 !

Network tab

On the **Network** tab the **Hostname,** the **IP address** and the **Netmask** must be inserted. The indication of the **Gateway** is optional.

To send SNMP traps the IP address of a connected service must be specified in the **SNMP** box. To add an SNMP recipient press the **Add** button to open the **Add SNMP Manager** dialog. In this dialog enter the IP address, of the SNMP manager, where the SNMP traps should be sent to and click **OK**. SNMP traps can also be sent to multiple recipients, if you enter more than one address. In addition the **SNMP version v1** or **v2c** must be specified.

Please see also section 5.3.7 Setup source **(Alarm tab)** and the description for the **Alarms** tab below for an instruction how an SNMP trap is activated for an individual alarm.

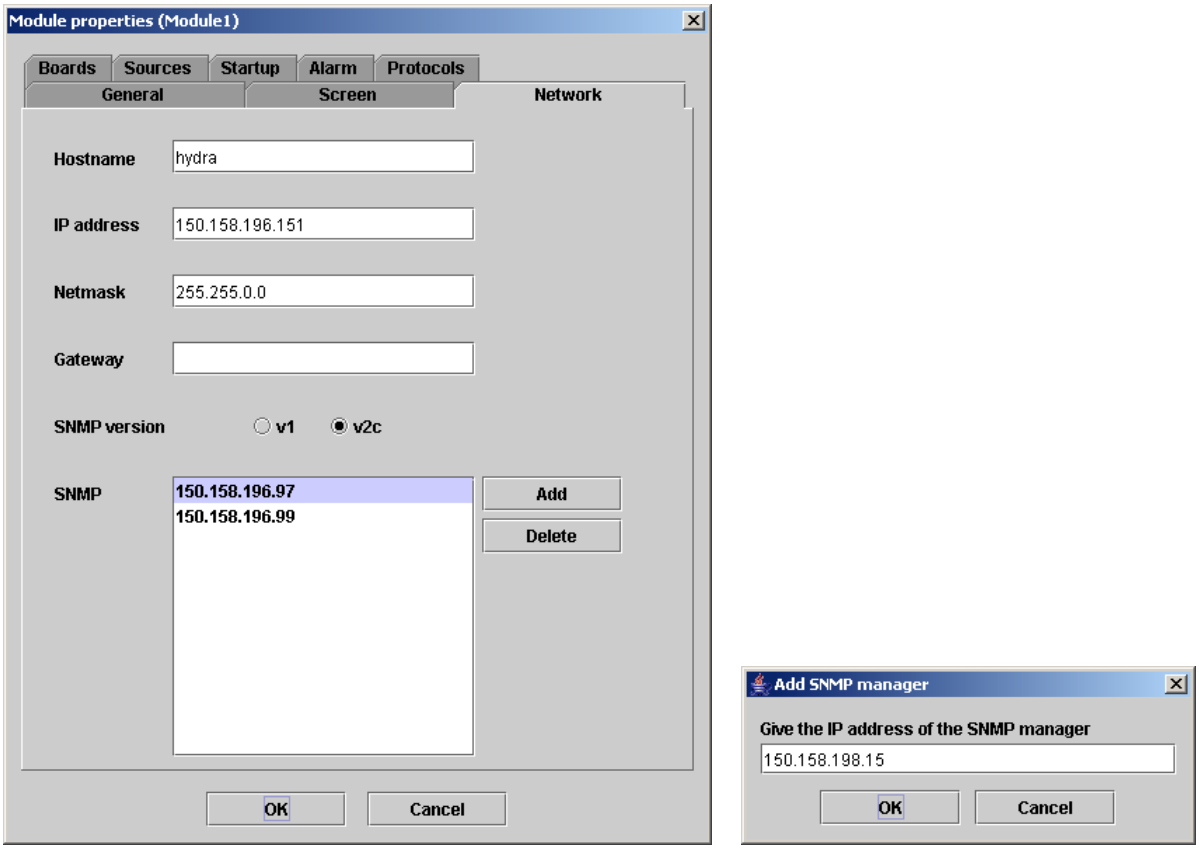


Figure 5-27
Module properties dialog – Network tab (left) and Add SNMP manager (right)

Boards tab

On the **Boards** tab all slots of the HYDRA are listed including the inserted boards and their version. The number in square brackets indicates the slot, followed by the type of board, while **v0**, **v1**, ... stands for **version 0**, **version 1** and so on. If Streaming video boards or output boards are selected, additional configuration options appear on the right part of the dialog:

Streaming video card

If your system is equipped with Streaming video cards, you should configure the **IP address**, **Netmask** and **Gateway** of the Streaming video card. As well select the appropriate compression algorithm. A list with the possible compression algorithms for various encoders can be found in section 5.3.5 Setup encoders.

NG Streaming Video Card

NG Streaming video cards are listed with the name **4-J2KDecoder vx** .

The most top **Network** section can be used to configure a port for service interaction of the board. The related connectors on the board are the two lower ones. The can be used for a redundant connection. Configuration of this port is not required for standard operation.

The necessary settings are **IP address** and **Netmask** in the **Network(Gb)** section and **Gateway** in the **General** section. They are used to configure the two upper connectors of the board, which establish a redundant connection to the video network.

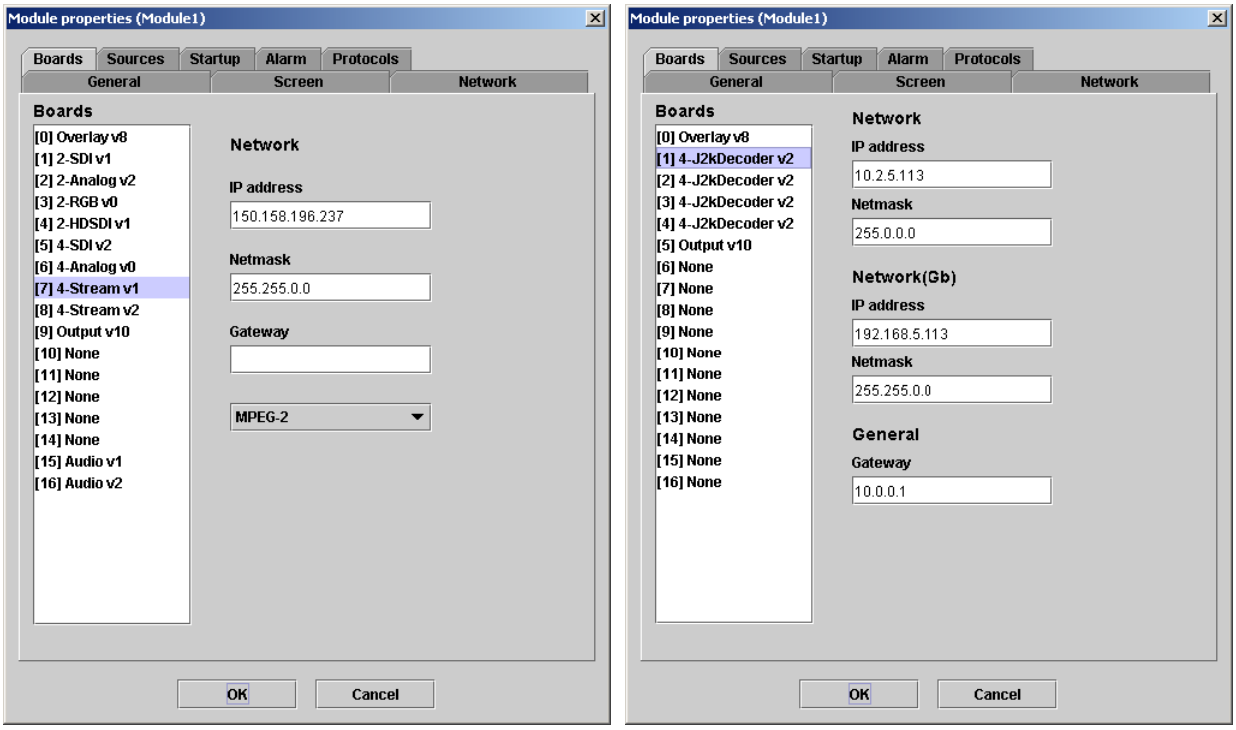


Figure 5-28
Module properties dialog – Boards tab –Streaming video card (left) and NG Streaming video card (right)

Output boards

In the **Resolution** list is by default the same setting indicated as in the **Resolution** list on the **Screen** tab. For DVI-DVI digital/analog output cards (output v8, output v9), DVI-DVI digital output cards with scaling (output v12) and DVI video output cards (output v4) the output resolution can be changed.

Dual resolutions are not available in the resolution list. Settings on the Boards tab refer to individual outputs.

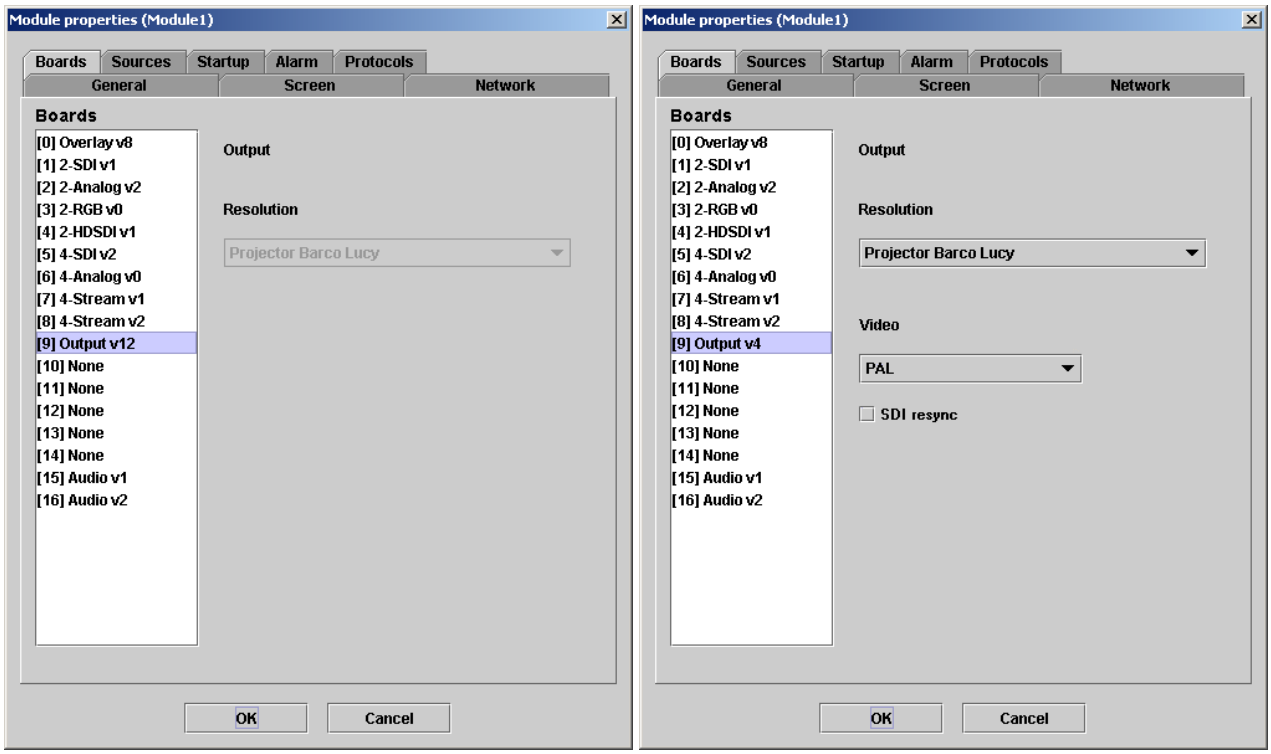


Figure 5-29
Module properties dialog – Boards tab – DVI-DVI output card with scaling (left) and DVI video output card (right)

The DVI-DVI digital/analog output cards and the DVI-DVI digital output cards provide both additional scaling capabilities for the output. It might be useful to change the output settings, if multiple output cards are used and if they connect to different display devices, with different resolutions and timings. One output card could then display the data without re-scaling it, because the settings chosen on the **Screen** tab provide already the desired output settings. This means if selecting this card on the **Boards** tab, the resolution of this card must not be changed. For the other card, the data needs to be re-scaled, therefore after selecting that card, the appropriate settings for the connected output device must be chosen from the **Resolution** list.

On the DVI video output card there are two types of output connectors (DVI and BNC), which are usually connected to devices with different requirements on the data. Therefore for both outputs the resolution has to be specified.

- If on the **Screen** Tab a setting suitable for output at the DVI connector has been selected for internal data processing, then this setting is used for the output on the DVI connector and the **Resolution** list is not applicable. For the BNC connection the appropriate setting can be selected from the **Video** list. This is a configuration that is optimized for output at the DVI connector, as the data at the BNC connector has to be re-scaled before being displayed. The **SDI resync** checkbox is selected and disabled in this case. This means that at the DVI output genlock is supported (if **Genlock on first source** was selected on the **Screen** tab) but not at the BNC output.

- If on the **Screen** tab a setting suitable for output at the BNC connector is selected, then this resolution is used for output at the BNC connector. On the **Boards** tab the setting for the DVI output is pre-selected in the **Resolution** list and cannot be changed. The **SDI resync** checkbox must be enabled. In addition the **Genlock on first source** checkbox on the **Screen** tab may not be selected.

The table below gives an overview about the possible configurations:

Screen tab Resolution	Genlock on first source	SDI resync	Boards tab Resolution / Video
For DVI output	☐ disabled or ☑ enabled	☑ enabled	**Video selectable**: settings for the BNC connector can be selected from the list
For BNC output	☐ disabled	☑ enabled	**Resolution not selectable**: The settings for the BNC connector are also applied for the DVI connector On both outputs genlocking not possible.

Table 5-7
Dependencies of output settings, Genlock and SDI resync

Sources tab

On the **Sources** tab all sources which are connected to the HYDRA can be managed. They are listed in the **Sources** table. The first column, marked with the number sign **#** indicates the physical input on the HYDRA, the second column, marked with a question mark indicates the source type. **M** stands for streaming video, **S** stands for SDI video, **H** is HD-SDI video, **A** is analog video and **R** is RGB data. To each source a non-default name can be assigned. Just place the cursor in the respective field in the **Name** column and type the name.

With the **Properties** button the **source properties** dialog of the selected source appears and changes of these properties can be made. This dialog is explained in the section 5.3.7 Setup source below.

With the **Audio sources** box the number of audio sources that are listed in the **sources** entry of the tree can be selected. By default no audio sources are listed.

The **Audio Cabling** entries provide two ways of cabling:

- **Alternately** (default): The audio standard cabling for the HYDRA is alternately. The left and right channel of a source is inserted consecutively to the HYDRA audio channels. The table below demonstrates this cabling:

channel	source	channel	source
0	1 left	**1**	1 right
2	2 left	**3**	2 right
4	3 left	**5**	3 right
...	...	**...**	...
54	28 left	**55**	28 right

Table 5-8
Alternately cabling

- **Sequential:** Sequential audio cabling inserts on the first part of the audio channels of HYDRA the left channels of the sources and on the second part of the audio channels of a HYDRA audio connector the right channels of the sources.

channel	source	channel	source
0	1 left	**28**	1 right
1	2 left	**29**	2 right
2	3 left	**30**	3 right
...	...	**...**	...
27	28 left	**55**	28 right

Table 5-9
Sequential cabling

With sequential audio cabling it is not guaranteed that the Hydra detects audio phase errors correctly!

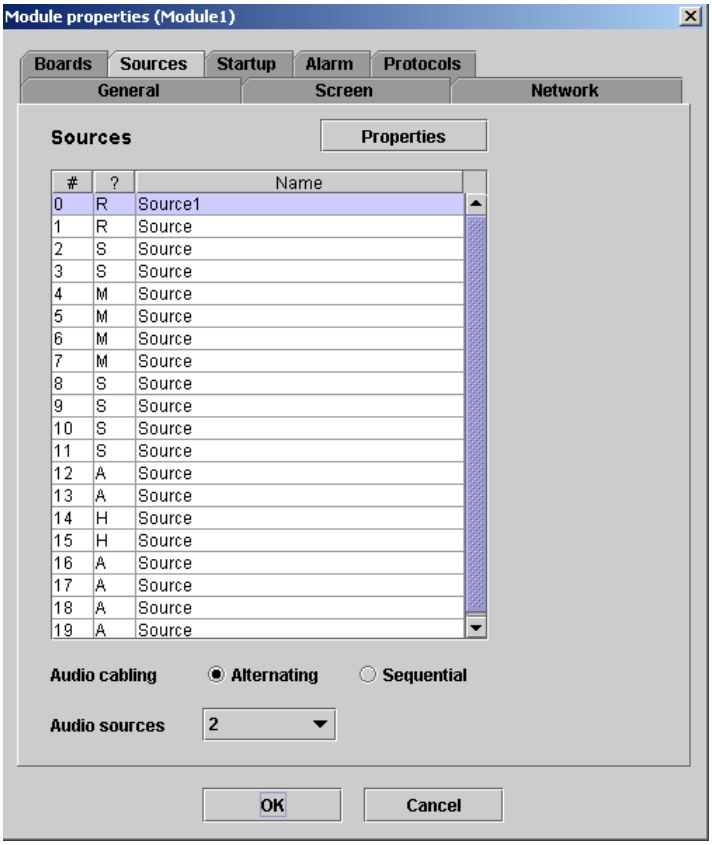


Figure 5-30
Module properties dialog – Sources tab

Startup tab

On the **Startup** tab, the layout of the module during HYDRA startup can be chosen. As default a black screen with the IP address of the HYDRA and the version of iSTUDIO will be displayed. Alternatively to that, the layout that was displayed at the shutdown can be displayed or a layout from the layouts list can be chosen.

Alarm tab

In order to notify of a general HYDRA alarm one tally of a video source can be selected. Therefore the **Enable tally on alarm** checkbox must be selected and a video source must be chosen from the **source** list. With the second list one of the tallies of the source can be specified. By this it is for example possible to control an external buzzer that is connected to the hardware output of the specified source, if an alarm occurs.

Only tallies that are configured as hardware output tallies or as software tallies can be used and are itemized; please refer also to section 5.3.7 Setup source (Tally tab).

One tally may at one time only be used for one alarm method:

- **Enable tally on alarm** is selected on the **Alarm** tab of the **Module properties** dialog (Setting of this tab),
- tally is enabled on the **Alarm** tab of the **Source properties** dialog, please refer to section 5.3.7 Setup source,
- **Set Tally on alarm** on the **Tally** tab of the **Source properties** dialog.

If one tally is already enabled in one of the other mentioned dialogs, it will not be available in the tally list of this dialog.

When selecting a tally of a Quad SDI video input card or a Quad analog video card there are also three tallies offered even though there are only two tallies available per source. Therefore tally three may not be selected! For a source of the Streaming video card, no tally may be selected!

On the **NTP Alarm** tab an alarm can be activated in case of the loss of NTP synchronization, please refer also to section 7.1.2 Synchronization errors. To configure an NTP alarm is only expedient, if the time setup of the respective HYDRA module is configured for NTP (not NTP Date) or for LTC/VITC synchronization (LTC/VITC only in wall mode), otherwise the alarm will always be active, please refer to section 5.2.7 Time setup.

To enable an alarm click the **Enabled** checkbox. With the **Delay (seconds)** box the seconds are indicated between the alarm is detected and it is displayed. With the **Clear** checkbox it can be selected whether alarms are automatically cleared within a **Delay** of seconds or not.

With the four checkboxes **Logging**, **Show in alarm list**, **Ring buzzer**, **Send SNMP** it can be selected on which interfaces an alarm shall be reported.

If **Ring buzzer** is enabled, on the wall alarms area the **buzzer** toggle button must also be activated to be able to ring the buzzer, please see section 5.2.2 Wall alarms area.

If an SNMP trap shall be sent, in the setup module dialog, SNMP must be configured, please see section 5.3.4 Setup module (Network tab). The **Use interval** checkbox enables to report errors within user defined time intervals. These intervals can be created and edited with the **Define intervals** dialog. You find a description of this dialog in section 5.3.7 Setup source (Alarms tab).

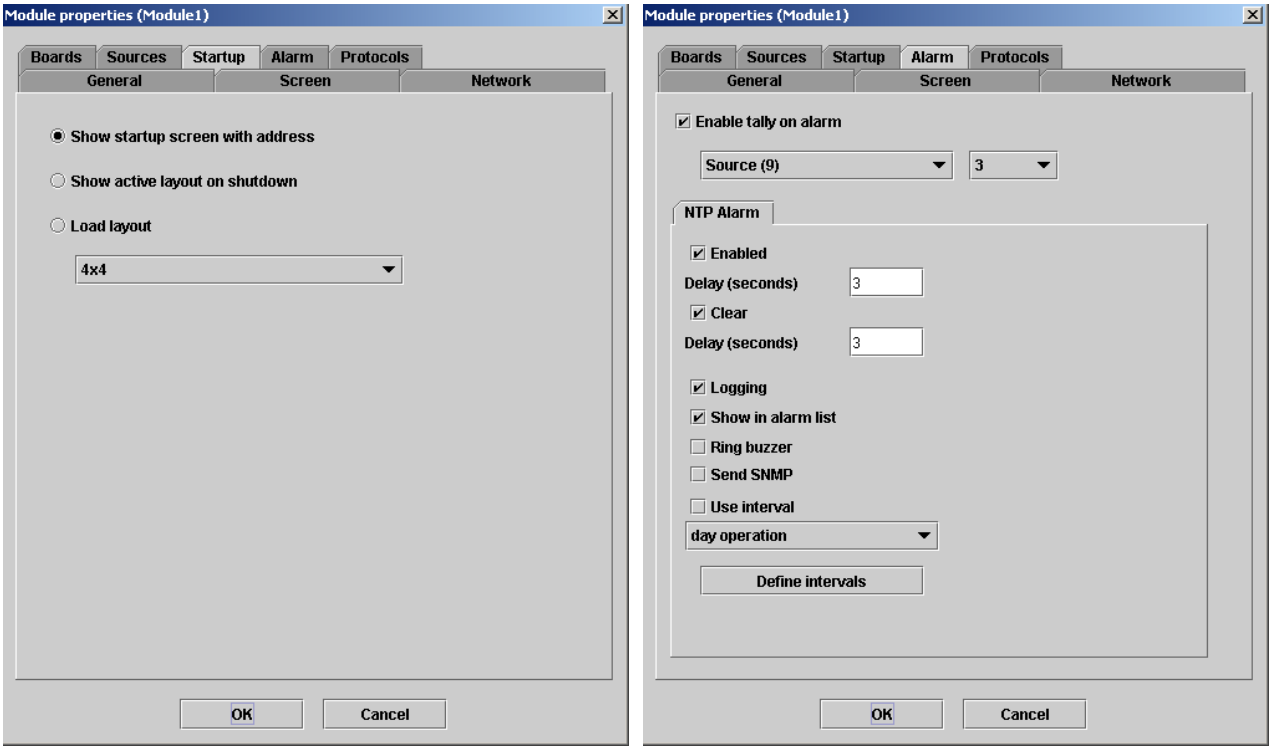


Figure 5-31
Module properties dialog – Startup tab (left) and Alarm tab (right)

Protocols tab

On the **Protocols** tab the settings for the logical signal processing system Andromeda can be set.

Andromeda is a protocol used to control the contents of UMDs (source name) and tallies. It is based on RS-232 serial communication. Therefore the **serial port** [1] on the single board computer on the HYDRA must be used and for **Device** on the Andromeda tab the entry **ttyS0** must be selected. With the **Baudrate** list select the relevant value of the signal. The **Swap tallies** checkbox enables to rotate the tallies. With the Enabled checkbox the usage of the Andromeda system can be enabled.

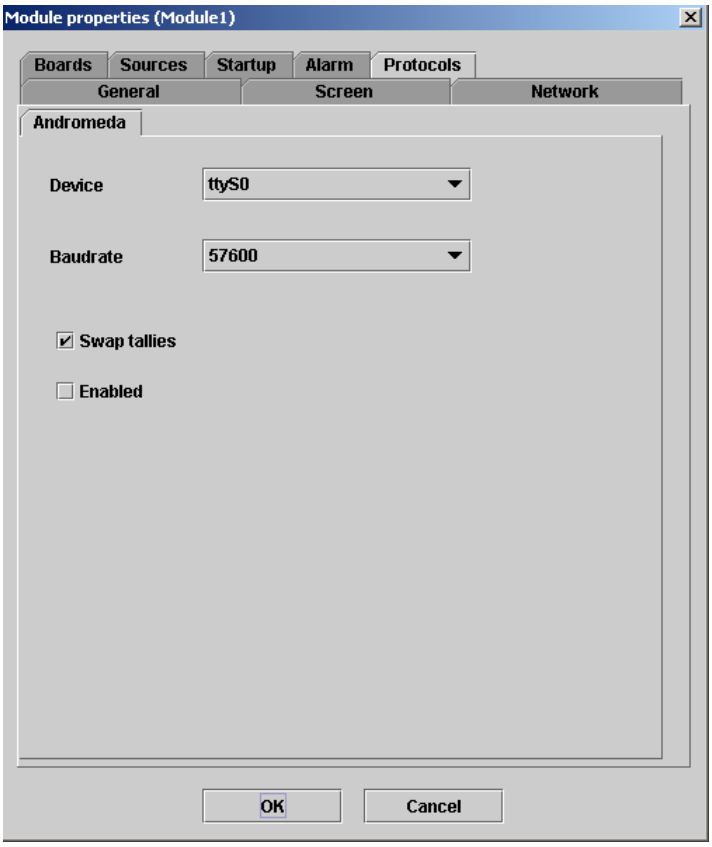


Figure 5-32
Module properties dialog – Protocols tab

5.3.5 Setup encoders

With the command **Setup encoders...** the **Setup encoders** dialog is opened to configure the settings for each type of encoder, that provides a video stream, monitored by the HYDRA module.

To define a new encoder type, enter its name into the **Name** field and click **Add**. The new encoder is displayed in the **Encoders** list and has default settings. To delete an already defined encoder select it with the mouse from the **Encoders** list and click **Delete**.

When editing the properties of an encoder, make sure that it is selected in the **Encoders** list. Especially when creating a new encoder, at first its name must be added, before its properties can be changed.

From the **IP protocol** list one of the three options **UDP**, **RTP** or **TCP** can be chosen.

Please note, that **RTP** can only be used with Streaming video boards with firmware version 2.0 and higher.

With the fields **Skip at start**, **Skip at end** the amount of bytes to be skipped at the start respectively the end of an incoming IP-packet is determined. With the **Stream type** list select the type of the stream. The following types can be selected:

Auto	automatic detection of the incoming stream (This method requires some extra time for the initial analysis of the stream)
Elementary	MPEG elementary stream
Program	MPEG program stream
Transport	MPEG transport stream

Into the **TCP** field a TCP string can be entered for configuration of the encoder. It is used, if the **TCP** checkbox is selected.

All changes done in the **Setup encoders** dialog are only adapted, when the **OK** button is pressed. With the **Cancel** button all changes also the added and deleted encoders are rejected.

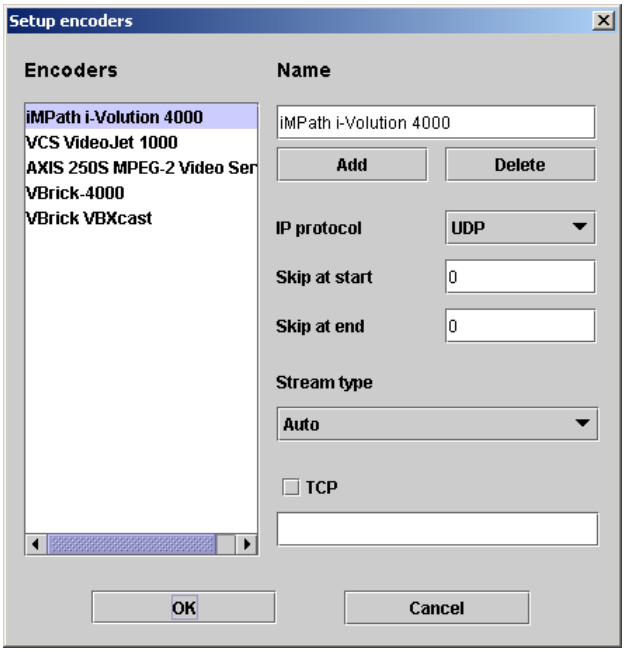


Figure 5-33
Setup encoders dialog

The following table lists the encoder specific values. They are valid with STREAMING VIDEO CARD with firmware 6.0. The values for **TCP** and **Video PID** must be entered not into the **Setup encoders** dialog but into the **Setup Streams** dialog, please refer to the next section. The compression algorithm must be entered in the **Setup module** dialog on the boards tab; please refer to section 5.3.4 Setup module.

Encoder **manufacturer – type**	**compression algorithm**	**IP protocol**	**Skip at start**	**Skip at end**	**Stream type**	**TCP**	**Video PID**
AXIS –	mjpeg	TCP	0	0	auto	ON	0
	Use port 80 for TCP and indicate the encoder IP address; signaling method is http; signaling is supported.						
206	Startstring example: `Axis241Q://GET /axis-cgi/mjpg/ video.cgi HTTP/1.0\n\n`						
206M	Startstring example: `Axis241Q://GET /axis-cgi/mjpg/ video.cgi HTTP/1.0\n\n` Resolutions with 1280 horizontal pixels are not supported.						
207 / 207W / 210 / 210A / 211 / 211A / 213 PTZ / 214 PTZ / 216FD / 225FD / 231D / 231D+ / 232D / 232D+ / 241S / 241SA / 242S IV	Startstring example: `Axis241Q://GET /axis-cgi/mjpg/ video.cgi HTTP/1.0\n\n`						
221	Startstring example: `Axis241Q://GET /axis-cgi/mjpg/ video.cgi HTTP/1.0\n\n` Up to 30 frames/sec						
240Q	Startstring example: `Axis241Q://GET /axis-cgi/mjpg/ video.cgi?camera=1 HTTP/1.0\n\n`						
241Q / 241QA	Startstring example: `Axis241Q://GET /axis-cgi/mjpg/ video.cgi?camera=1 HTTP/1.0\n\n` A maximum use of 4 4CIF streams with a maximum quality of 75% (or at least 25% compression) is recommended.						
Barco – TransForm SCN	scn	UDP	0	0	auto	OFF	0
BOSCH – NWC-0455 Dinion / NWC-0455 DinionXF / VideoJet8008 / VIP X1 / VIP X1600 / VIP X2	h263	RTP	0	0	auto	ON	0
	No on-board RCP+ support; I-frame distance may not be 0. Startstring example: `VIP X`						
BOSCH – Videojet 10 / Videojet 1000 / Videojet Xpro / VIP 10 / VIP 1000	h263	RTP	0	0	auto	OFF	0
	No on-board RCP+ support; I-frame distance may not be 0.						
BOSCH – Videojet 1000 / Videojet 8000 / Videojet Xpro / VIP 1000	mpeg2	RTP	4	0	auto	OFF	0
	No on-board RCP+ support.						
Cieffe – NETTUNO	mpeg4	UDP	0	0	auto	OFF	0
Coretec – VCX-2400-E	mpeg2	UDP	0	0	auto	OFF	0
Cornet – iVDO Streamer 2/4 Encoder	mpeg2	UDP	0	0	auto	OFF	0
Cornet – iVDO Streamer 2/4 Encoder	mpeg4	RTP	0	0	auto	OFF	0
DVTeL – 7601e	mpeg4	RTP	0	0	auto	ON	0
	Use port 3000 for TCP, Startstring example: `SmartSight`						

Encoder **manufacturer – type**	**compression algorithm**	**IP protocol**	**Skip at start**	**Skip at end**	**Stream type**	**TCP**	**Video PID**
Exterity – A/V server	mpeg2	RTP/UDP	0 /4	0	auto	OFF	0
	IP protocol: for Transport/UDP = UDP for Transport/RTP and Elementary = RTP SkipAtStart: for Elementary = 4, else = 0						
GE Security (Visiowave) – Discovery 2400 / Discovery 300 (Visiobox) / Evolution HD	2D wavelet	UDP	0	0	auto	ON	0
	Use the encoder TCP port for TCP, Startstring example: `Visiobox` Signaling method is TCP, signaling is supported.						
HaiVision – Hai210	mpeg2	UDP	0	0	auto	OFF	0
Hi Tron – e-Videoserver	mpeg4	RTP	0	0	auto	OFF	0
	No usage of Advanced simple profile. Encoder must be set to “Send to (Client) IP”						
iMPath – i1000	mpeg2	UDP	0	0	auto	OFF	0
iMPath – i4000	mpeg2	RTP/UDP	0	0	auto	OFF	0
	RTP or UDP has to be configured in accordance with the encoder configuration.						
IndigoVision – VideoBridge™ 8000 881 / 8000 882	mpeg4	TCP	0	0	element.	ON	0
	Use port 49500 for TCP; for each encoder the streaming port must be different. TCP is enabled without sending a string. The Barco Indigovision interface tool is required for the streaming!						
IndigoVision – VideoBridge™ 8000 882	mpeg4	RTP	0	0	auto	OFF	0
	The Barco Indigovision interface tool is required for the streaming!						
JVC – VN-C655U	mjpeg	UDP	0	0	auto	OFF	0
	Software viewer is needed to start the multicast stream and for keep-alive.						
LANACCESS – onSafe MPEG2	mpeg2	RTP	0	0	auto	OFF	0
LANACCESS – onSafe MPEG4	mpeg4	-	-	-	-	OFF	-
Lenel – Network vido recorder	mjpeg	UDP	0	0	auto	OFF	0
	TCP is not enabled for the Streaming video card.						
Mavix – MediaRacer 100 / MediaRacer 150	mpeg2	UDP	12	0	auto	ON	0
	Multiple ports for TCP possible, Startstring: `Mavix`						
Mavix – MediaRacer 100 / MediaRacer 150	mpeg4	UDP	12	0	auto	ON	0
	Multiple ports for TCP possible, Startstring: `Mavix`						
Mobotix – D10Di-FixDome / M22	mxpeg	UDP	0	0	auto	ON	0
	Startstring: `Mobotix://GET /control/faststream.jpg?` `↳ stream=MxPEG&fps=25.000 HTTP/1.0\n\n` Signaling method is HTTP, signaling is supported. The stream is a unicast stream. Resolutions up to 1280×576 supported.						
NiceVision (Fast Video Security) – ENC 8M2	mpeg2	RTP	4	0	auto	OFF	0

Encoder **manufacturer – type**	**compression algorithm**	**IP protocol**	**Skip at start**	**Skip at end**	**Stream type**	**TCP**	**Video PID**
NiceVision – Recorder Pro	mpeg4	RTP	0	0	auto	OFF	0
	Only CIF resolution, only I and P frames are used. No successive Video Object Plane (VOP) start markers without data (used in recorded streams); Stream must be multicasted and always available on the network (no stream setup signaling required).						
Optelecom-NKF – c15 / c20 / CS20	mpeg2	RTP	0	0	auto	OFF	0
	The Ethernet interfaces must be set to **Forced 100 Mbps Full Duplex**, when connecting to an NKF Switch.						
Optibase – MGW3100	mpeg2	–	–	–	auto	OFF	–
Path 1 – Cx 1800	mpeg2	UDP	0	0	auto	OFF	0
Pelco – PelcoNet NET350	h263	RTP	0	0	auto	OFF	0
	I-frame distance may not be 0.						
Pelco – PelcoNet NET4001A	mpeg2	RTP	4	0	auto	OFF	0
	No on-board RCP+ support.						
Pelco – PelcoNet NET4001A	h263	RTP	0	0	auto	OFF	0
	No on-board RCP+ support; limited frame rate.						
Siemens OTN – MVIDIP	mpeg2	–	–	–	–	OFF	–
Siemens OTN – MVIDIP	mpeg4	RTP	0	0	auto	OFF	0
Tandberg – E5710	mpeg2	–	–	–	–	OFF	–
Tandberg – Mediaplex-20	mpeg2	UDP	0	0	auto	OFF	0
Tandberg – TT6120	mpeg2	UDP	0	0	auto	OFF	0, 1, ...
	Generates multiple-program transport streams (MPTS). The Video PID is used to select the program.						
Tandberg – TT7116	mpeg2	UDP	0	0	auto	OFF	590
Teleste – EASI BLUEbox / EASI IPET1 / EASI IPET3 / EASI MoRIS	mpeg2	UDP	0	0	auto	OFF	0
Teleste – EASI MoRIS / EASI MPC-E1 / EASI MPC-E2 / EASI MPC-E4 / EASI MPX-E8	mpeg4	RTP	0	0	auto	OFF	0
Telindus – Cellstack Centauri	mpeg2	RTP	0	0	auto	OFF	0
VBrick – VB4000 / VB6000	mpeg2	UDP	0	0	auto	OFF	0
	ISMA features not supported.						
VBrick – VBXcast 9140-4200 / VBXcast 9140-4300	mpeg4	UDP	12	0	auto	OFF	0
	ISMA features not supported.						
Verint – S1500e / S1600e-T	mpeg4	RTP	0	0	auto	ON	0
	Startstring example: `SmartSight` Only with encoder firmware 3.20 build 444. Usage of S1700e recommend.						
Verint – S1700e	mpeg4	RTP	0	0	auto	ON	0
	startstring example: `SmartSight`						

Encoder **manufacturer – type**	**compression algorithm**	**IP protocol**	**Skip at start**	**Skip at end**	**Stream type**	**TCP**	**Video PID**
VideoLAN – VideoLAN (VLC/VLS)	mpeg2 mpeg4 mjpeg	see below:	0	0	auto	OFF	0
	For IP protocol multicast, unicast, UDP or RTP is possible.						
Vorx – VON v1.0	mpeg2 mpeg4	UDP	0	0	auto	OFF	0
	Decoding of AES streams is not supported.						

Table 5-10
Encoder dependant parameter values

For some encoders the settings are not defined, if there are difficulties to set them, please contact the Barco support, see section 10.1 Hotline.

5.3.6 Setup streams

With the command **Setup streams...** the **Setup streams** dialog is opened. It serves to configure the settings needed to connect to the video streams monitored by the HYDRA.

Like on the **Setup encoders** dialog with the **Name** field and the **Add** and **Delete** button, streams can be added and removed, please see the section above. To edit the settings of a stream, the stream must be selected in the **Streams** list; a purple bar then marks it.

The entries under **Encoder** define the connecting settings for communication from the HYDRA to the encoder. The **Encoder** list contains all defined encoder types. If the suitable type is not yet in the list it must be defined with the **Setup encoders** dialog first. If in the **Setup Encoder** dialog **TCP** was enabled then the IP address of the encoder must be inserted into the **IP address** field and the respective port number on that the encoder listens to messages from the HYDRA must be inserted into the **Port** field.

The **Video PID** should be entered for transport streams and if the PAT (program allocation tables) or the PMT (program map tables) is not sent with the stream. **0** is a predefined value. It causes an auto-search for the video PID. No video will be shown, if no valid PID is found.

The section **Destination** describes the settings the encoder uses to distribute the stream. The HYDRA needs these settings to receive the stream. It can be selected between the packet types **Unicast**, **Broadcast** and **Multicast**.

If **Unicast** is selected, only the **Port** of the Streaming video card must be indicated. The encoder sends the stream just to one single unicast IP address, which is in this case the IP address of the Streaming video card, please refer to section 5.3.4 Setup module **(Boards)**. With **Multicast** you have to indicate the multicast address of the stream into the **IP address** field (ranges within 224.x.x.x to 239.x.x.x) as well as the **Port** where the stream is sent to. For a **Broadcast** stream, you only have to indicate the respective **Port**.

All changes done in the **Setup streams** dialog are only adapted, when the **OK** button is pressed. With the **Cancel** button all changes also the added and deleted encoders are rejected.

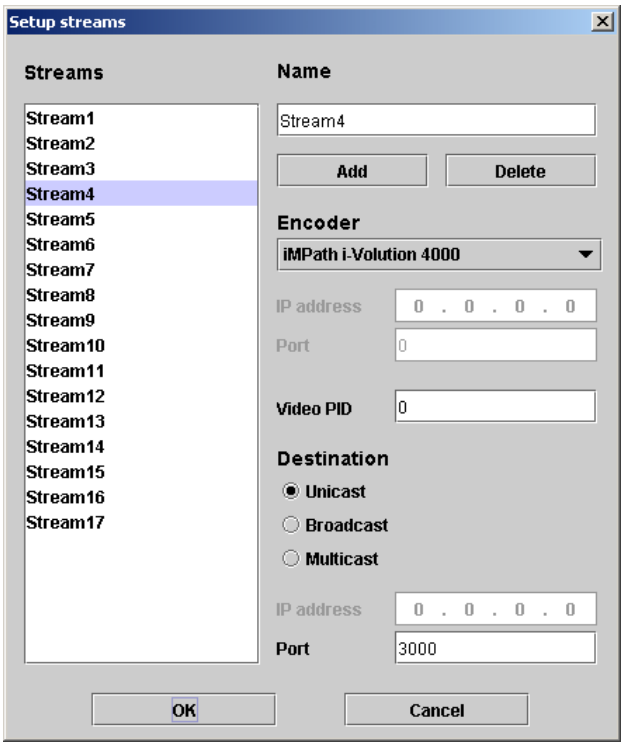


Figure 5-34
Setup stream dialog

5.3.7 Setup source

One possibility to open the **Source properties** dialog is to use the command **Setup source...** of the **Module** menu or the shortcut menu, if a video object on the work area is selected. The displaying properties and other related properties of the source of this object can be changed.

The other possibility is to open the **Module properties** dialog, select the respective source on the **source** tab and press the **properties** button to edit the properties, please refer to section 5.3.4 Setup module **(Sources)** above.

The title bar of the **Source properties** dialog indicates the type of the input board that is used to insert the source and the name of the source. The dialog contains six tabs: The **Video/RGB**, **Audio**, **Alarm**, **Tally**, **VBI** and **Copy** tab. On the five first tabs the properties can be determined. On the **Copy** tab a selection of properties of the edited source can be copied to the sources selected in the sources list.

At the bottom of the dialog there is an **OK** button. Clicking this button confirms the chosen settings and closes the dialog. Clicking the **Update** button applies the changes to the selected source but keeps the dialog open for further changes.

Updating causes the **Cancel** button to become red. This signals that canceling can not reverse the changes. The **Cancel** button anyhow closes the dialog.

Video/RGB tab

Depending on the connected source either a **Video** tab or an **RGB** tab is displayed. On this tab the display characteristics can be set. When releasing a slider after moving it, the new setting will directly be adapted. If the source is displayed on the projection module changes can directly be viewed. Numeral values can also be inserted in the text boxes. In general, values become just permanently set when the **OK** or **Update** button is pressed. Clicking the **Default** button restores the iSTUDIO default settings for a video or RGB source.

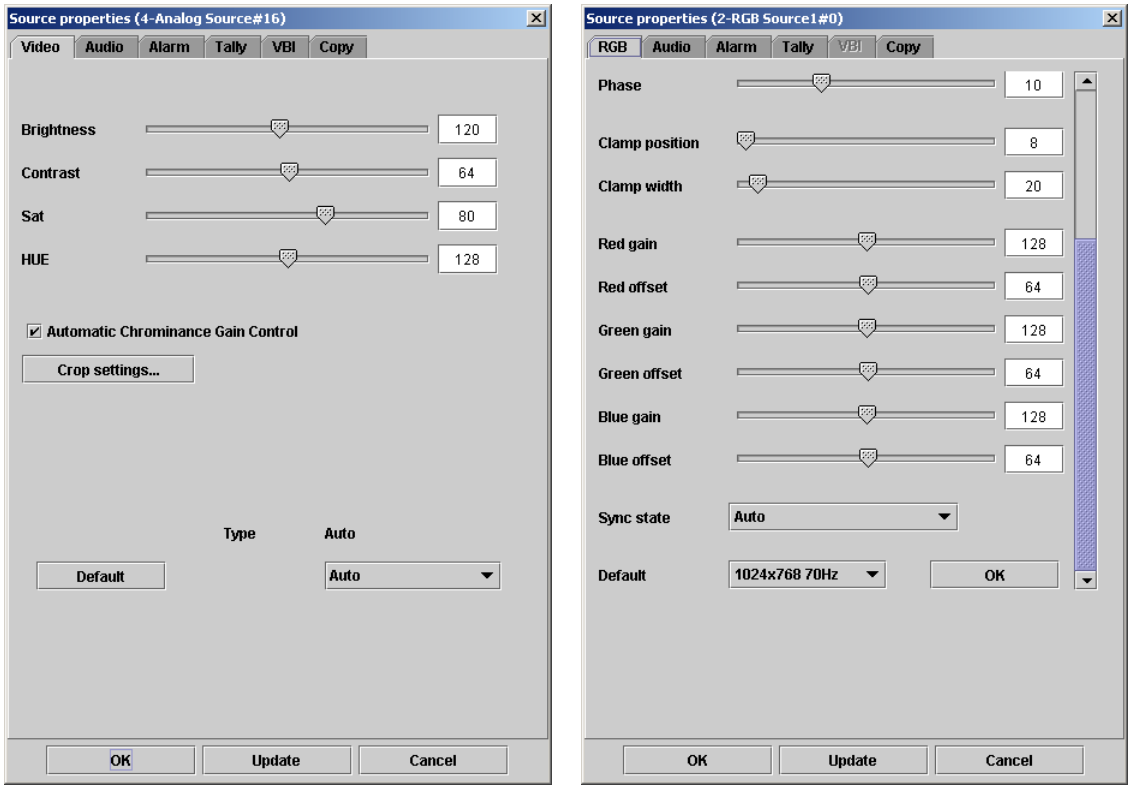


Figure 5-35
Source properties dialog – Video tab – Examples of quad analog video source (left) and RGB source (right)

Setting	Applies to	Meaning
Video cards:		
Automatic Chrominance Gain Control	Quad analog video card	Automatic gain control for chrominance values of the video signal switched on or off
Crop settings	all cards	Opens the **Crop settings dialog**, to adjust the visible part of the video; see below.
Default	all cards	Resets the sliders to the default values
Type	all cards except Streaming Video Card	indicates the type of the source
Type selection	all cards except Streaming Video Card, HD-SDI input card	From a list a dedicated type can be set. HD-SDI input card performs always autodetection.
SVHS	Dual analog input card	Choice between VHS and SVHS
Stream	Streaming video card	Selection of the active stream
RGB input card :		
Sync State		specifies the format of the RGB signal
Default		default resolution for the signal

The selection of the video stream for a Streaming Video Card will be overruled when assigning another stream to this source with the **Edit object** dialog of a video object, please refer to section 5.6.4 Edit object... .

The table below lists all available display settings for digital and analog video and RGB sources:

Source type	Video source parameters	Value range
S – Video Tab SDI video via Dual SDI input card	Black	**0-255**
	Brightness	**0-255**
	Contrast	**0-1023**
	SatSinHUE	**0-2047**
	SatCosHUE	**0-2047**
S – Video Tab SDI video via Quad SDI input card	Brightness	**0-255**
	Contrast	**0-255**
	Sat	**0-255**
	HUE	**0-360**
H – Video Tab HD-SDI video via HD-SDI video card	Brightness	**0-255**
	Contrast	**0-255**
	Sat	**0-255**
	HUE	**0-360**
A – Video Tab analog video via Dual analog video card	Brightness	**0-255**
	Contrast	**0-255**
	SatU	**0-255**
	SatV	**0-255**
	HUE	**0-255**
A – Video Tab analog video via Quad analog video card	Brightness	**0-255**
	Contrast	**0-127**
	Sat	**0-127**
	HUE	**0-255**

M – Video Tab streaming video via Streaming video board	Brightness	**0-255**
	Contrast	**0-255**
	Sat	**0-255**
	HUE	**0-360**
R – RGB Tab RGB input card	HStart	**0-2047**
	HActiveWidth	**0-2047**
	VStart	**0-2047**
	VActiveWidth	**0-2047**
	HTotal	**0-4095**
	Phase	**0-31**
	Clamp position	**0-255**
	Clamp width	**0-255**
	Red gain	**0-255**
	Red offset	**0-127**
	Green gain	**0-255**
	Green offset	**0-127**
	Blue gain	**0-255**
	Blue offset	**0-127**

Table 5-11
Settings of video and RGB sources

On the **Crop settings** dialog the visible area of the video can be set. There are three possibilities to edit the cropped view, with the mouse, with the sliders or with the numerical values in the text field.

To edit the measures of the cropped view with the mouse, move the mouse into the upper part of the dialog, which contains the visual presentation of the cropped view. When moving the mouse over the border of the cropped view, the mouse becomes a resize tool and you can drag the borders by keeping the left mouse button pressed. If the mouse is inside the cropped view it becomes a move tool and you can move the section within the normal view.

The sliders and text fields can also be used. The position of the **X** and **Y Offset** sliders define the distance of the visible video image towards the left and top position of the available video image in percent. The **Width** and **Height** sliders consider the remaining space between current X Offset position and right border, respectively Y Offset position and lower border as their available range. The numerical values in the boxes at the right side consider always the whole width or height of the normal view as 100%.

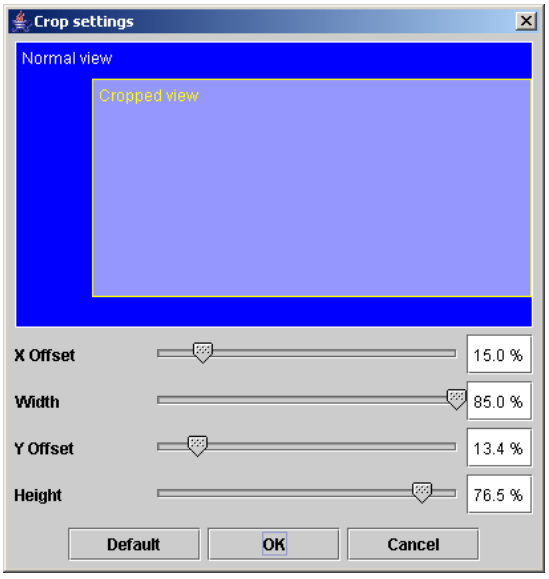


Figure 5-36
Crop settings dialog

Audio tab

The **Audio** tab serves to select the audio sources, which can be displayed with up to 16 audio bars located on the left and right or the top side of an object. First the **Audio mode** has to be selected to define the type of the displayed audio sources, please see the table below.

Audio mode	Meaning	Available sources
Embedded	Embedded audio sources available via SDI and HD-SDI sources	16 audio sources per source. Numbering refers to the four group channels. Thereby e.g. 4-1 stands for channel one of group four.
External	External audio sources inserted via analog or digital audio input boards	Up to 112 sources are available. Numbering from 0, 1, ... , 111
NGM-164	External audio sources, streamed by the selected NGM-164	Up to 64 sources are available per audio stream. Numbering from 0, 1, ... , 63

The numbers from 00 to 15 on top of the dialog symbolizes the alignment of the audio bars in the video. Audio bar 00 to 07 is displayed on the left side, where 00 is at the left border and 07 the most centered on the left side. Similarly 08 is the most centered on the right side and 15 the audio bar on the very right.

Each audio bar needs a distinct width. If the object is too small to show all audio bars next to each other, the audio bars in the middle will not be displayed!

To each channel an audio source can be assigned by means of the list with the available audio sources next to that channel. Formatting and number of available sources, which are offered in the list depends on the audio mode. An explanation is also in the table above.

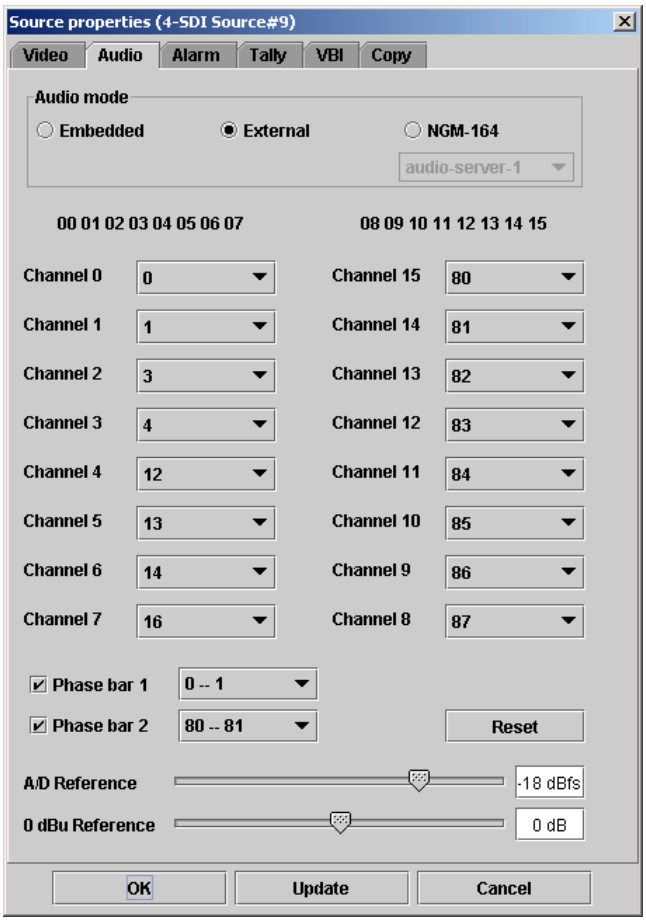


Figure 5-37
Source properties dialog – Audio tab

Furthermore two **Phase bars**, each showing the phase between two adjacent audio channels, can be displayed. Therefore the respective phase bar checkbox must be selected and the two audio channels must be chosen from the list. The phase bars are then displayed on top of the respective object. The phase bar is displayed as a gray bar with a scale from **-1** to **+1**. Positive values are displayed as a green block ranging from **0** to the value. Negative values are displayed as violet block ranging from **0** to the value. Values in the range of **+1** indicate that both sources are in phase and of acceptable level. Values in the range of **-1** indicate that the signals are out of phase but of acceptable level. Values in the range of **0** indicate either that there are completely different signals or that both signals are not of acceptable level or that the signals have a phase difference of about 90°.

The audio reference level can be adapted to the level of the input signal by means of the two audio reference sliders on the bottom of the dialog. Depending on the audio type and scale type the setting of the one or the other or both sliders have to be used. Please see the table below:

Signal	A/D Reference	0 dBu Reference
digital audio on digital scale	no effect	no effect
digital audio on analog scale	shift the reference level	no effect
analog audio on digital scale	no effect	shift the reference level
analog audio on analog scale	shift the reference level	shift the reference level

The range for A/D Reference and 0 dBu Reference depend on the type of the selected audio sources:

type of audio source	A/D Reference	0 dBu Reference
embedded / external	-1 .. -24 dBfs	-20 .. +20 dB
NGM-164	-10 .. -30 dBfs	-12 .. +12 dB

The Update button on the bottom of the dialog assigns the audio channels to the sources in the indicated way. The Reset button restores the default values, but it does not update!

An explanation of definition and ballistics of the audio bars and phase bars is given below:

The audio bars are displayed according to the respective international standard:

BBC PPM, **DIN**, **Nordic**	Peak Program Meter	IEC 60268-10 International standard
VU, **Extended VU**	Volume Indicator meter	IEC 60268-17 International Standard
AES/EBU	Digital audio peak level meter	IEC 60268-18 International standard

Ballistics is integration time and decay time of the audio level meters. It is built in accordance to the above mentioned international standards with the following meaning:

- **Integration time** is the time between the moment when the indication passes the specified lower point of the scale and the moment when the pointer reaches the reference indication.
- **Decay time** is the time between the removal of a steady-state input signal (corresponding to reference indication) and the moment when the indication passes a specified lower point of the scale.

Ballistics of the audio phase meters is built as follows:

- **Integration time** is the time between the moment when the indication passes the 0 point of the scale and the moment when the pointer reaches +1 (or –1).
- **Decay time** is the time between the removal of a steady-state input signal (corresponding to +1 or –1 indication) and the moment when the indication reaches the 0 indication.

Alarm tab

On the **Alarm** tab the alarms can be configured. The meaning of the alarms and their value ranges are explained in section 7.1 Source related errors. Also a tally can be selected. To enable an alarm or a tally to be shown select the alarm or tally name in the select alarm list. Its name is then displayed red. Click the **Enabled** checkbox to activate it. The bullet in front of the alarm's name becomes green instead of red. With the **Delay (seconds)** box the seconds are indicated which pass between the alarm is detected and it is displayed. With the **automatic clearing** checkbox it can be selected whether alarms are automatically cleared within a **Delay** of seconds or not.

One tally may at one time only be used for one alarm method:

- tally is enabled on the **Alarm** tab of the **Source properties** dialog (Setting of this tab),
- **Set Tally on alarm** on the **Tally** tab of the **Source properties** dialog,
- **Enable tally on alarm** is selected on the **Alarm** tab of the **Module properties** dialog; please refer also to section 5.3.4 Setup module.

If one tally is already enabled in one of the other mentioned dialogs, it will not be available in the tally list of this dialog.

With the five checkboxes **Logging**, **Show in objects**, **Show in alarm list**, **Ring buzzer**, **Send SNMP** it can be selected on which interfaces an alarm shall be reported.

If **Ring buzzer** is enabled, on the wall alarms area the **buzzer** toggle button must also be activated to be able to ring the buzzer, please see section 5.2.2 Wall alarms area.

If an SNMP trap shall be sent, in the setup module dialog, SNMP must be configured, please see section 5.3.4 Setup module (**Network Tab)**. The **Use interval** checkbox enables to report errors within user defined time intervals. These intervals can be created and edited with the **Define intervals** dialog. Click the **Define intervals** button to open the dialog.

Dependent on the selected error a **Level** slider allows setting the level for an alarm.

The alarms **audioloss** and **audiooverlevel** are set in dBu; nevertheless, the audio bars are displayed with the configured scale type.

If the alarm settings are applied to audio sources of NGM-164, then for the audio alarms **Audioantiphase<0**, **Audioantiphase<45**, **Audioantiphase<90** and **Audiooverlock** not only the chosen channel is configured but also the corresponding channel in pair. A configuration for audio channel 0 is automatically also applied to audio channel 1, and so on. If audio channel 1 is linked to another source and configured later on, then these settings are also applied to audio channel 0 and its original configuration gets overwritten.

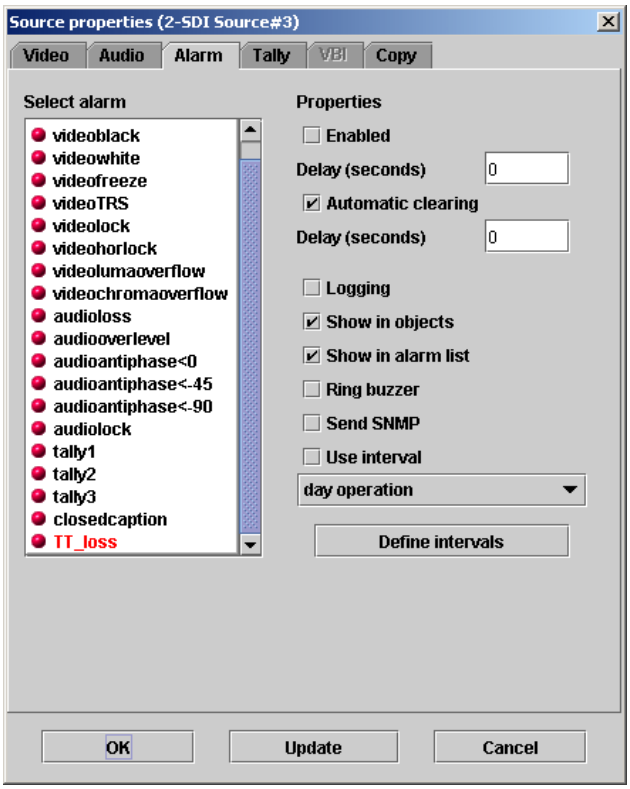


Figure 5-38
Source properties dialog – Alarm tab

Alarm tab – Define intervals

Intervals are used to specify times during which alarms shall be monitored. These time spans are listed in the **Active at** field. Also the lack of an alarm can be reported. These time spans are listed in the **Active and inverted at** field. Active and inverted serves to detect for example the presence of a video signal when there is no signal expected.

The first line of the dialog is used to add a new interval. Insert the name in the **New interval** box and click **Add**. Now the new interval name can be found in the second line in the **Interval** list. An interval can also be deleted by selecting it within the **Interval** list and clicking **Delete**. To configure the time intervals select the interval's name from the **Interval** list. Now you can specify a time span in the third row. You can choose, if alarms shall be active at this time span (click on the **Add** button on the right of the **Active at** field) or active and inverted (click on the **Add** button on the right of the **Active and inverted at** field). Within a field multiple time spans can be listed. To delete a time span out of a list, select the time span with the mouse and click on the **Delete** button on the right of the respective field.

It is sufficient to define an interval once. It then is applicable for each source.

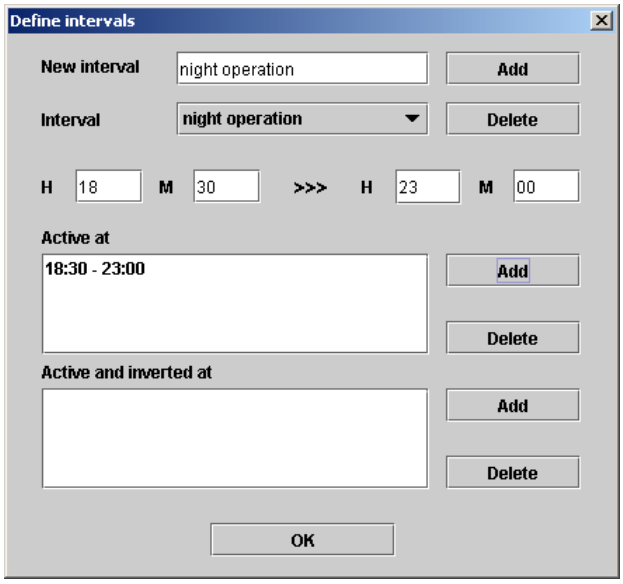


Figure 5-39
Source properties dialog – Define intervals dialog

Tally tab

On the **Tally** tab the tallies can be configured. In general a tally can be a hardware input tally, a hardware output tally or a software tally. Please refer to the HYDRA user's manual to see how many tallies are supported by which card.

The dialog allows only selecting those tallies that are really available. Tallies not supported by the input card are grayed out.

If a distinct tally is in use for module alarms, please refer to section 5.3.4 Setup module (Alarm tab), then it can no longer be switched to **hardware input**, because a hardware input tally can not be used for module alarms. **Hardware input** is grayed out in that case. This implies also, that a tally that shall be used for module alarms must first be set to be a **hardware output** tally or a **software** tally.

The following additional functionality can be assigned to a tally:

- **Scramble source on tally**
  The video source is scrambled with a 70% level, as long as the tally is set. If scrambling is set in the video object properties, this has the priority and **Scramble source on tally** can not be seen.

- **Start timer on tally**
  A count-up timer is placed in the first UMD line next to the UMD text starting with 00:00:00, when the tally is set. When the tally is cleared the counter gets removed. This can for instance be used to show the time a program is running by setting the tally when the program starts and clearing it when it is done. In combination with **Set tally on alarm** this can be used to show how long an alarm is present.
- **Set tally on alarm**
  A tally is set if an alarm of the source is detected. The tally is cleared as soon as the alarm is no longer active.

Only tallies that are configured as hardware output tallies or as software tallies can be used and are itemized; please refer also to section 5.3.7 Setup source (Tally tab).

One tally may at one time only be used for one alarm method:

- **Set Tally on alarm** on the **Tally** tab of the **Source properties** dialog, (Setting of this tab)
- tally is enabled on the **Alarm** tab of the **Source properties** dialog,
- **Enable tally on alarm** is selected on the **Alarm** tab of the **Module properties** dialog, please refer also to section 5.3.4 Setup module.

If one tally is already enabled in one of the other mentioned dialogs, it will not be available in the tally list of this dialog.

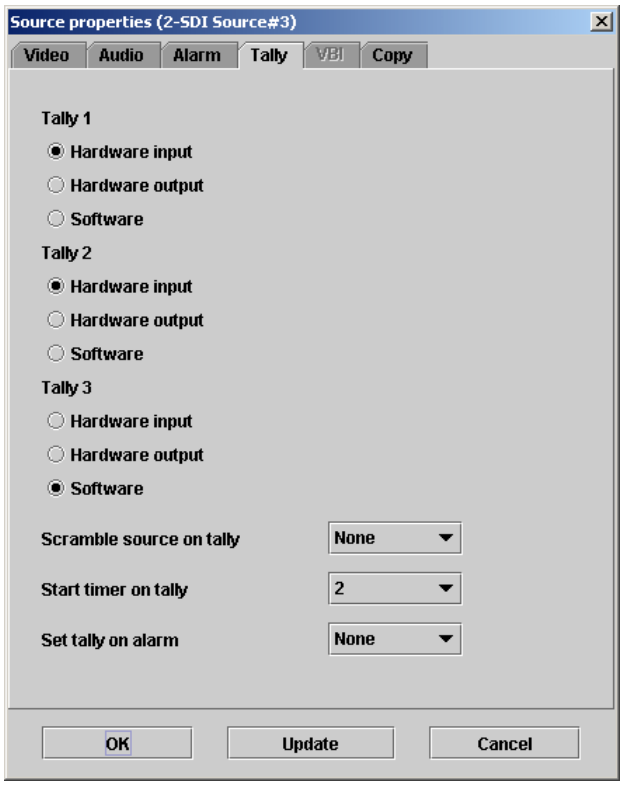


Figure 5-40
Source properties dialog – Tally tab

The appearance of the tallies is associated with the object. The respective settings can be set in the **Edit object** dialog box – **Properties** tab – **Tally** tab, see section 5.6.4 Edit object... .

When displaying tallies together with other on-screen information, e.g. audio meters, artifacts may appear on the screen. This might happen, if tallies are set to **visible** (**Edit object** – **Properties** – **Tally** tab) and at the same time either UMDs are not selected or UMDs are selected together with the **inside** option (**Edit object** – UMD tab).

VBI tab

For sources of a Quad SDI video card or a Quad analog video card also the **VBI** tab is available. By means of this tab the line where vertical interval time code (VITC) is contained can be selected for PAL or NTSC sources.

Copy tab

The **Copy** tab serves to copy properties of the selected source to other sources. The active source is indicated in the **title** bar. Those sources that shall have the same properties can be selected from the **Sources** list on the right. Multiple sources can be selected by clicking with the mouse on them while the **Ctrl** key is pressed. Additionally the **Select all** button can be used to select all sources and the **Select none** button can be used to deselect all currently selected sources.

The five checkboxes **Video**, **Audio**, **Alarm**, **Tally** and **ACG Control** serve to determine which properties are copied. **Audio**, **Alarm** and **Tally** refer to the properties, which have been specified on the respective tabs. **Video** refers to all properties on the Video tab except the **Automatic Chrominance Gain Control** property. This is selected separately with the **ACG Control** checkbox.

Finally with the **Copy to** button the selected properties are assigned to the selected sources.

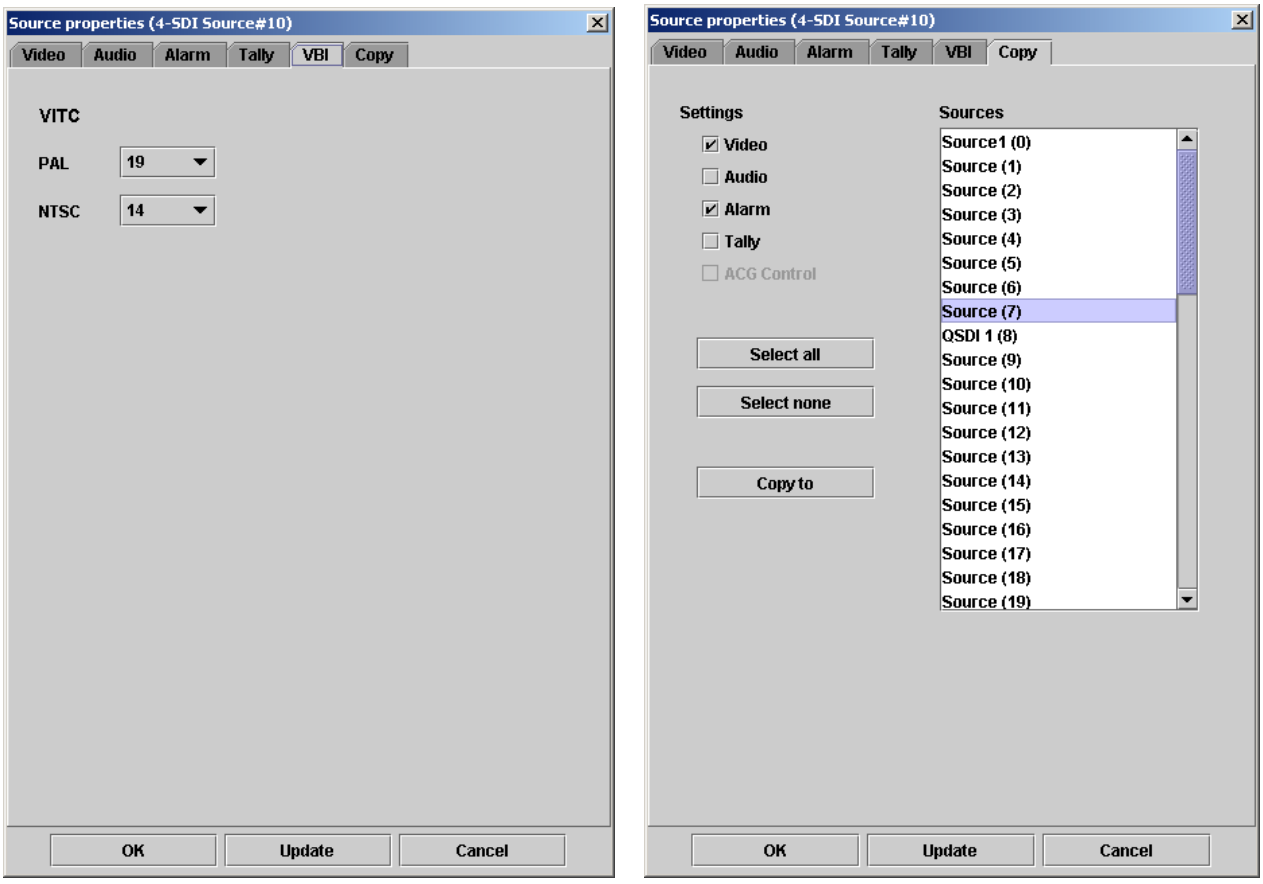


Figure 5-41
Source properties dialog – VBI tab and Copy tab

5.3.8 Freeze, unfreeze source

With the toggle command **Freeze/unfreeze source** the source of the selected object can be frozen or unfrozen. On the projection module a frozen source is marked with the writing **FREEZE** in it.

If there is no source assigned to the selected object, this command is of no effect.

5.4 Layout

A layout contains the arrangement of the objects and their properties as well as a background. It comprises what is displayed on one projection module. A layout can be saved, edited and deleted. Furthermore its background can be defined.

The related commands are in the **Layout** menu, in the **Layout** toolbar as well as in the layout shortcut menus.

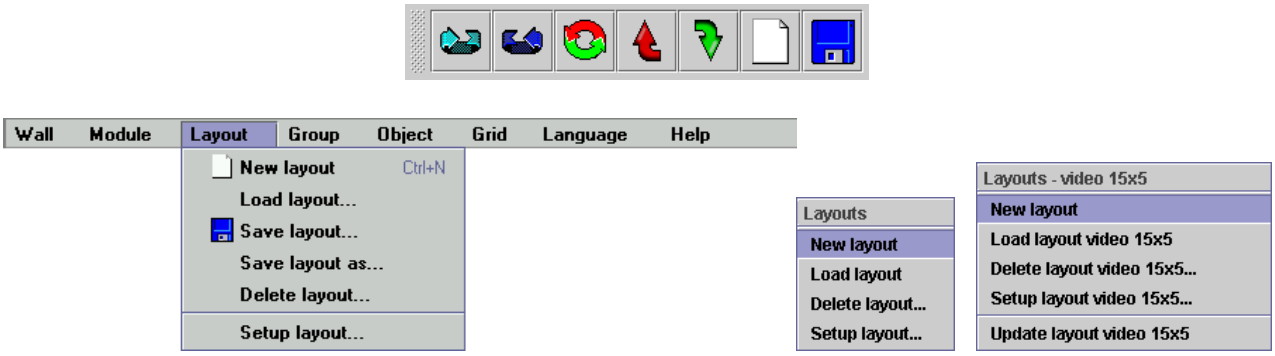


Figure 5-42
Layout toolbar, menu and shortcut menu

5.4.1 Module layout

New layout

The command **New layout** opens a new layout without any objects on it and a 4 by 4 grid. It refreshes the work area. The background color has the default value.

This command is also accessible via the button.

Load layout...

The command **Load layout** opens the **Load layout** dialog. In brackets in the title bar of the dialog the available size on the flash disk in KB is indicated. In the **Load layout** dialog box click on the name of the layout you want to load or type the name into the filename box and press **OK**.

The layout will be displayed on the work area.

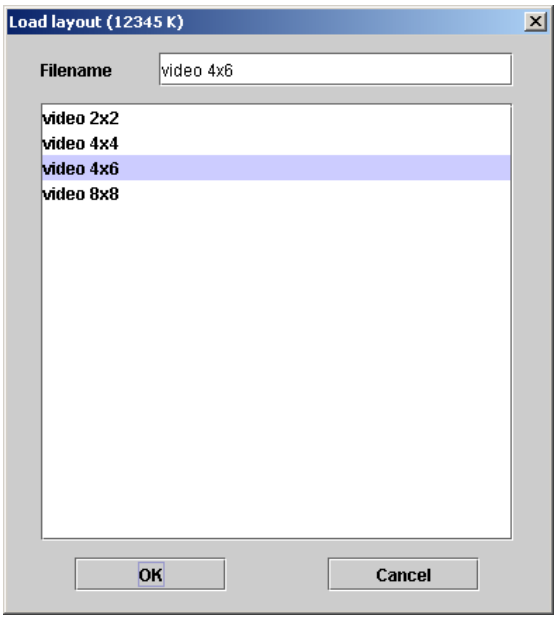


Figure 5-43
Load layout dialog

Save layout...

With the **Save layout** dialog a layout can be saved. In the **Save layout** dialog box type the template name into the **Filename** box and press **OK**.

This command is also accessible via the button.

Save layout as...

A layout can also be saved under another name. With the command **Save layout as...** the dialog box can be opened. Type the layout name in the **Filename** box and press **OK**.

Delete layout...

With the **Delete layout** dialog box a layout can be deleted.

To delete one of the stored layouts, open the **Delete layout** dialog box. In the **Delete layout** dialog box click on the name of the layout you want to delete or type the name into the filename box and press **OK**.

5.4.2 Setup layout

The command **Setup layout...** opens the **Layout properties** dialog box. The settings of this dialog determine the background of the selected layout.

A background color can be chosen. If **Bitmap** is selected a file can be used as background. Section 8.1 Data structure and data access contains an instruction how to make bitmaps accessible to the HYDRA. A bitmap can either be centered, tiled or scaled.

If **Enable external overlay** is chosen, input from the overlay input card can be displayed by using it as background, please refer to section 8.3 Redundant operation.

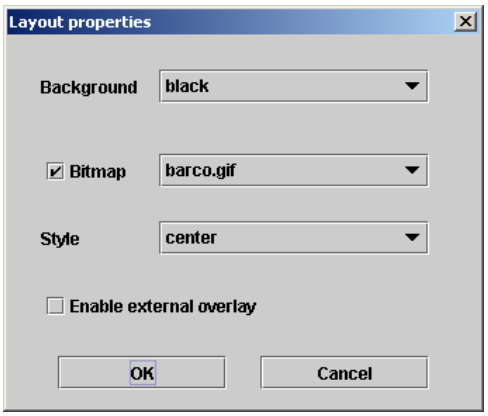


Figure 5-44
Layout properties – dialog box

5.5 Group (selection)

In the **Group** menu you find the commands to select objects to a group as well as the operations which can be performed on an object selection. A selection is used as a temporary group to facilitate editing. A group selection is not saved in a layout.

Objects can be selected and deselected. Object properties can be loaded to all objects of the group. The whole group can be deleted, stacked or hidden. The sources of all contained video objects can be frozen and the objects can be aligned. Only one selection is possible at a time.

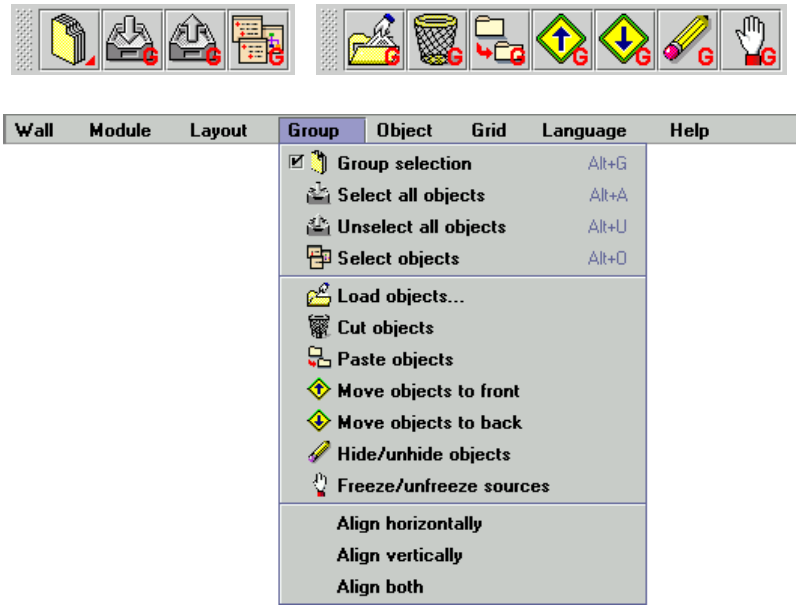


Figure 5-45
Selection toolbar, Edit selection toolbar and Group menu

5.5.1 Enable group selection

The command **Group selection** must be checked to enable all other commands in the **Group** menu and in the **Selection** and **Edit selection** toolbar. The or button indicates whether **Group selection** is enabled or not.

To switch **Group selection**, also the shortcut key **Alt+G** can be used.

If the Group selection is enabled, a double click on an object does not longer open the Edit object dialog but adds and removes the object to the group.

5.5.2 Selecting objects

Select all objects

The command **Select all objects** selects all objects on the work area.

To select all objects, use also the shortcut key **Alt+A** or the button.

Unselect all objects

The command **Unselect all objects** deselects all objects.

To deselect all objects, use also the shortcut key **Alt+U** or the button.

Select objects

The command **Select objects** supports to select multiple objects by means of the mouse. It enables to span a rectangular array. All objects lying completely or partly within this array will toggle their selection state. If anew a rectangular shall be drawn, then the command **Select objects** must be chosen again.

To select objects, use also the shortcut key **Alt+O** or the button.

5.5.3 Load, cut and paste object properties

The following commands have mostly the same function as the respective commands for a single object. They help to assign object properties, but instead of assigning it to a single object they are assigned to all objects of the selection. All properties of an object except position, size and the source can be saved as template and reassigned. For comparison please refer to section 5.6.5 Cut, copy, paste and paste new object properties.

Load objects

With the command **Load objects...** the **Load objects** dialog box is opened. In brackets in the title bar of the dialog the available size on the flash disk in KB is indicated. The properties of a saved object can be assigned to all objects that are selected on the work area by clicking the name of the object properties you want to load or type the name into the **Filename** box and press **OK**.

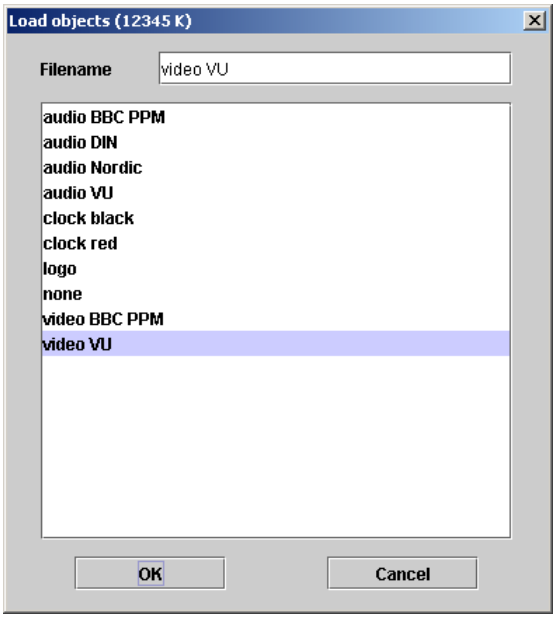


Figure 5-46
Load objects dialog box

To load objects, use also the button.

Cut objects

This command deletes all objects of the selection.

In contrary to the command Cut object with this command here there are no object properties copied to the clipboard.

To delete objects, use also the button.

Paste objects

This command assigns to all objects of the selection the object properties of a single object which were copied before by means of the commands copy object or cut object, please refer to section 5.6.5 Cut, copy, paste and paste new object properties. Also the name of the original object is copied to the selected object. The selected objects maintain their originally assigned sources.

To paste objects, alternatively use the button.

5.5.4 Stacking order of objects

Move objects to front

The command **Move objects to front** stacks the selected objects to the topmost position. The stacking order within the selection remains.

To stack the objects, alternatively use the button.

Move objects to back

The command **Move objects to back** stacks the selected objects to the undermost position. The stacking order within the selection remains.

To stack the objects, alternatively use the button.

5.5.5 Hide/unhide objects

By default an object can be displayed on the display area as soon as object properties are assigned to it. But an object can also be hidden. Then it is crossed out in the work area and after an update invisible in the display area, please refer also to section 5.6.7 Hide/unhide object.

Applying the command **Hide/unhide objects** to a selection of objects changes the visibility for each object depending on the state it had before.

Alternatively the button (**Hide/unhide objects**) from the button bar can be used.

5.5.6 Freeze, unfreeze sources

With the toggle command **Freeze/unfreeze sources** the freezing state of all sources of the selected objects gets changed. This means all sources that were running become frozen and vice versa. On the projection module a frozen source is marked with the writing **FREEZE** in it. If there is no source assigned to the selected object, this command is of no effect. To freeze or unfreeze a single source, please refer to section 5.3.8 Freeze, unfreeze source.

Alternatively the button (**Hide/unhide objects**) from the button bar can be used.

5.5.7 Align objects

By means of the commands **Align horizontally**, **Align vertically** and **Align both** a selection of objects can be aligned to each other.

Align horizontally

The command **Align horizontally** aligns all objects of the selection whose **Y** coordinates overlap. The upper sides of these objects will be aligned to the upper side of the object, which is most left.

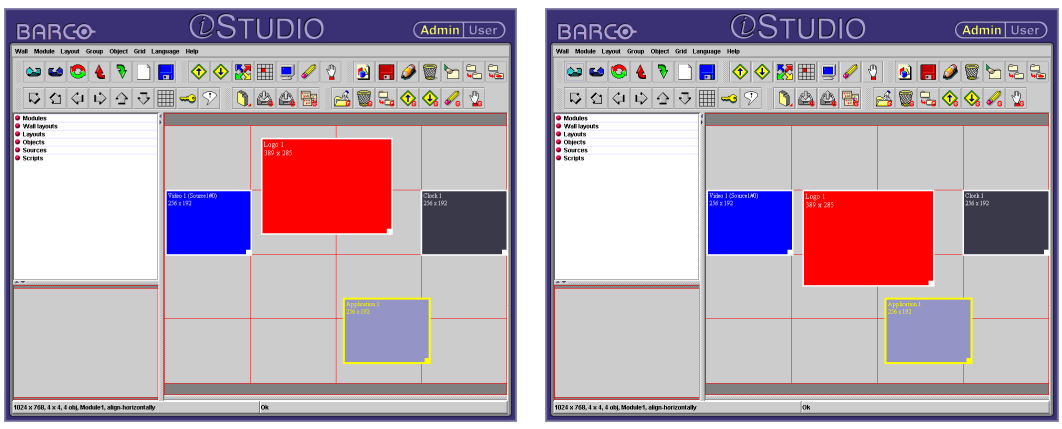


Figure 5-47
Horizontal alignment of a selection

In the figure above the blue video object is the most on the left. The red logo object and the black clock object are aligned to its upper side. The **Y** coordinates of the teal application object do not overlap with the other objects; therefore it is not aligned.

Align vertically

The command **Align vertically** aligns all objects of the selection whose **X** coordinates overlap. The upper sides of these objects will be aligned to the left side of the most top of these objects.

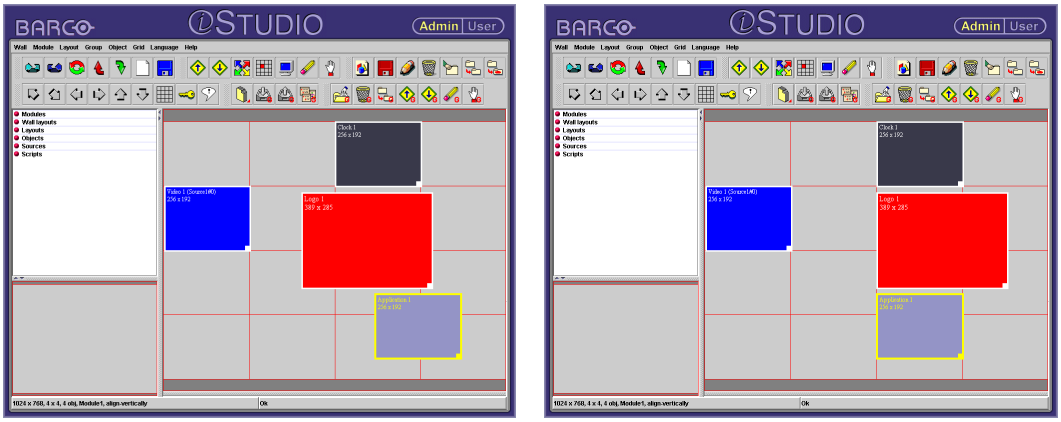


Figure 5-48
Vertical alignment of a selection

Here the **X** coordinates of three objects overlap. They get aligned vertically. The blue video object remains unaligned.

Align both

The command align both aligns all objects of the selection in horizontal and in vertical direction in the way explained above.

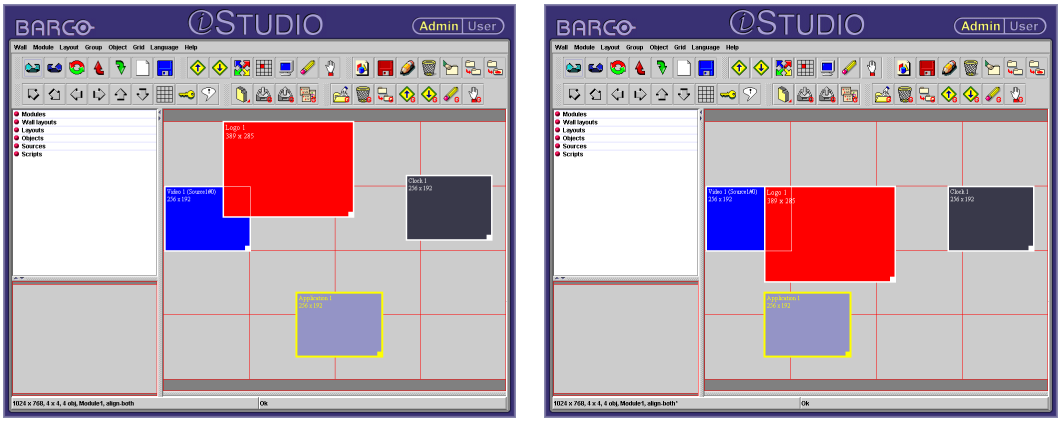


Figure 5-49
Horizontal and vertical alignment of a selection

The **Y** coordinates of the three objects on top overlap, so they are aligned horizontally. Also the **X** coordinates of the two objects in the middle overlap; they are aligned vertically.

5.6 Object

Objects can be created (**New object**). They can be edited (**Edit object...**). This means various properties can be assigned like the type, border color, position, size etc. Most of these properties can be saved as an object template (**Save object...**) to the **objects** folder in the tree, a template can be assigned to another object (**Load object...**) or be deleted (**Delete object...**). Most actions done with an object can be revoked (**Undo**) and again restored (**Redo**).

An object on the work area can be cut (**Cut object**), the properties of an object (except position and size) can be copied (**Copy object**) and assigned to another existing object (**Paste object**) or to a newly created object (**Paste new object**).

The objects can be stacked (**Move object to front** / **Move object to back**) and the display of objects on the projection module can be prevented (**Hide/unhide object**).

In each grid cell an object can be created (**Fill grid**). An object can be expanded to fit exactly into the grid cells it already covered complete or partly (**Fit object into grid**) or it can be sized to exactly the size of one grid cell (**Size object to grid**). An object can also be sized to full screen (**Size object to screen**).

Finally for control purposes with **show viewer** a viewer object can as well be displayed on the monitor connected to the operator PC.

All these above mentioned operations can be performed by means of the **Object** menu or the shortcut menu and the **layout, edit object** and **object** toolbar. They are described in detail in the following:

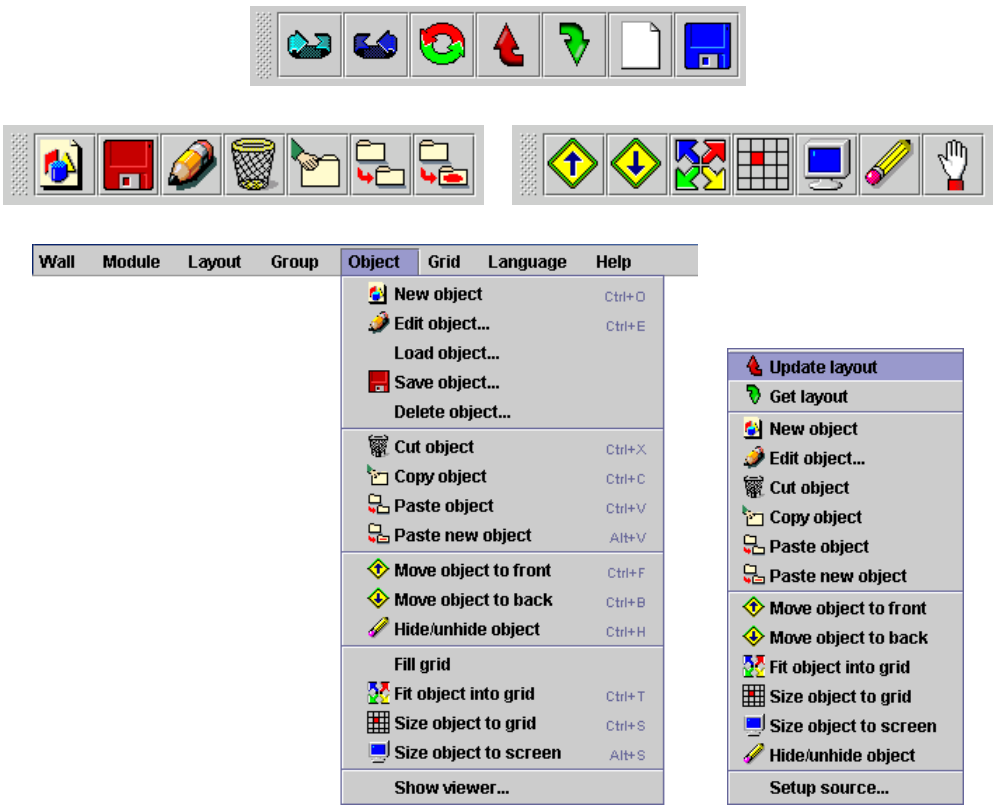


Figure 5-50
Layout toolbar, Edit object toolbar, Object toolbar, Object menu and shortcut menu

5.6.1 Undo and redo

With the **Undo last action** button most of the actions done with an object can be revoked.

Explicit exceptions are all kind of **Save**, **Load** and **Delete** actions. They can not be revoked.

Pressing the **redo** button restores actions which were revoked before.

5.6.2 New object and fill grid

New object

The command **New object** creates a new object on the work area. The object is located in the upper left corner and has the size of one grid cell. Objects that have already been there remain under the newly created object. A new object has no certain properties except size, position and the default standard name.

The default name of the object that was created first is **Object 1**, for the next object it is **Object 2**, etc. If an object is deleted or renamed, then its default name is no longer in use and that name will be used if anew an object is created. (If an object type has been assigned to an object, then the default name is changed according to the object type and counting starts again with 1, e.g. **Video 1**, **Video 2**, ...)

To create a new object, use also the shortcut key **Ctrl+O** or the button.

Fill grid

The command **Fill grid** creates in each cell of the grid a new object. Objects that have already been there remain under the newly created objects.

5.6.3 Load, save or delete objects

Load object...

The properties of an object except position, size and the source can be saved and stored in templates. The saved object-properties templates are listed in the tree structure under the **Objects** entry. To assign one of the stored object templates to an object on the work area, the respective object must be selected. The properties layout can be assigned either by clicking on an **Objects** entry in the tree structure or by opening the **Load object** dialog box from the **object** menu. In the **Load object** dialog box, click on the name of the object properties you want to load or type the name into the **Filename** box and press **OK**.

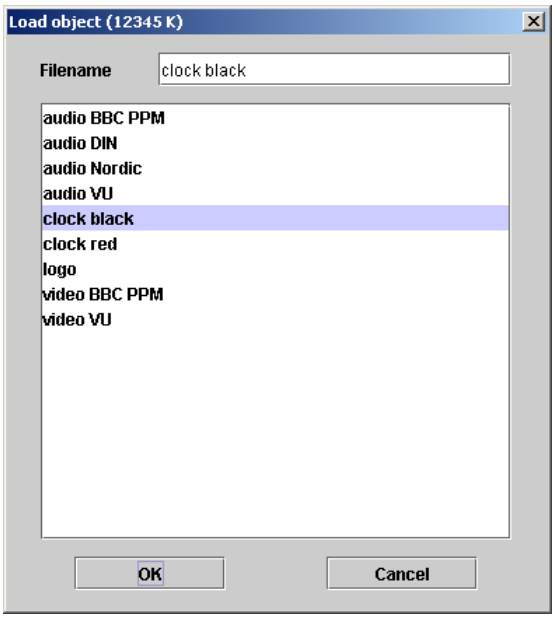


Figure 5-51
Load object dialog box

Save object...

With the **Save object** dialog the properties of the selected object, except position, size and the selected source can be saved. The Save object dialog box can also be opened by pressing the button (**Save object**).

In the **Save object** dialog box type the template name into the **Filename** box and press **OK**.

The **Save object** dialog box has a similar appearance like the **Load object** dialog box.

Delete object...

With the **Delete object** dialog box an object-properties template can be deleted.

To delete one of the stored object-properties templates, open the **Delete object** dialog box from the **object** menu. In the **Delete object** dialog box click on the name of the object properties you want to delete or type the name into the **Filename** box and press **OK**.

The **Delete object** dialog box has a similar appearance like the **Load object** dialog box.

5.6.4 Edit object...

The command **Edit object** opens the **Edit object dialog box**.

To open the **Edit object dialog box**, use also the shortcut key **Ctrl+E** or the button (**Edit object)**

The most convenient way to open the **Edit object dialog box** is a double click on the respective object on the work area. But this is only possible, if the button (**group selection**) is not enabled, see section 5.5.1 Enable group selection.

The **edit object dialog box** is very important to determine all properties of an object. It consists of the five tabs **Type**, **Border**, **Parent**, **Properties** and **UMD**.

Type tab

On the **Type** tab the type of the object can be chosen, a name can be assigned to the object. Positioning can be determined and finally transparency can be assigned.

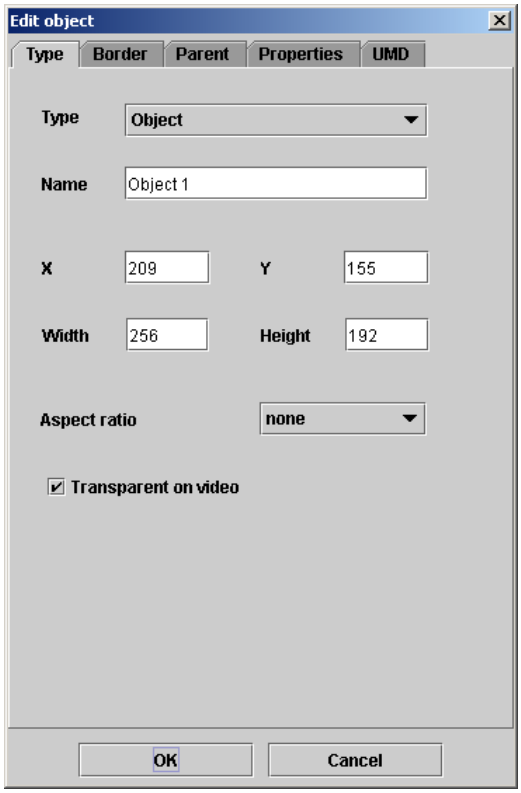


Figure 5-52
Edit object dialog box – Type

With the **Type** list the type of the object can be determined. 13 different types are available. Depending on the type, the color of the filling changes. Also the **properties** tab differs depending on the type. The following table lists the available objects with function and color of the filling:

type	function	color of filling
Object	default of a new object	light grey
Video	displays a video source	
	source is active	light blue
	source is frozen	dark blue
Audio	displays an audio source	green
Text	displays text	orange
UMD	displays up to 16 lines of UMD	orange
Tally	displays up to 16 tallies	grass-green
Logo	displays a bitmap	red
Clock	displays a clock	dark grey
Timer	timer functionality	black
Stopwatch	advanced timer functionality	black
Alarm	lists alarms	dark red
Viewer	viewer functionality	magenta
Application	displays applications	light green

Table 5-12
Color codes of object types

In the **Name** box you can insert a self-defined name.

If the object type is changed afterwards, again the default name is set for this object. Therefore it is better to select first the type of the object and to insert as second the name!

For information how the default name is built, please refer to section 5.6.2 New object and fill grid

With the **X** box and the **Y** box the position of the upper left corner can be indicated. The **Width** box and the **Height** box indicate the size of the object.

In the **Aspect ratio** list the values **none**, **4/3, 4/3+, 16/9 or 16/9+** can be selected. **4/3** and **16/9** apply the aspect ratio to the whole object, this is the video, border and UMD. The two settings **4/3+** and **16/9+** display the video itself in the indicated aspect ratio. The whole object including borders and UMD might have another aspect ratio.

If a fixed aspect ratio is selected the object gets adjusted to this setting, in doing so the width of the object remains and the height of the object gets adapted.

Position and size can be changed with the X, Y, Width or Height box even if the **- button is toggled on, see section** 5.7.2 Lock objects**!**

The check box **Transparent on video** defines the transparency of objects, which are stacked on top of this object. If a stacked object is of type video only its border and UMD becomes transparent. Objects off all other types become completely transparent. The grade of transparency is determined by the underlying video object, see Properties Tab - Video object below.

Border tab

On the **Border** tab, the way the border of the object is displayed on the projection module can be determined.

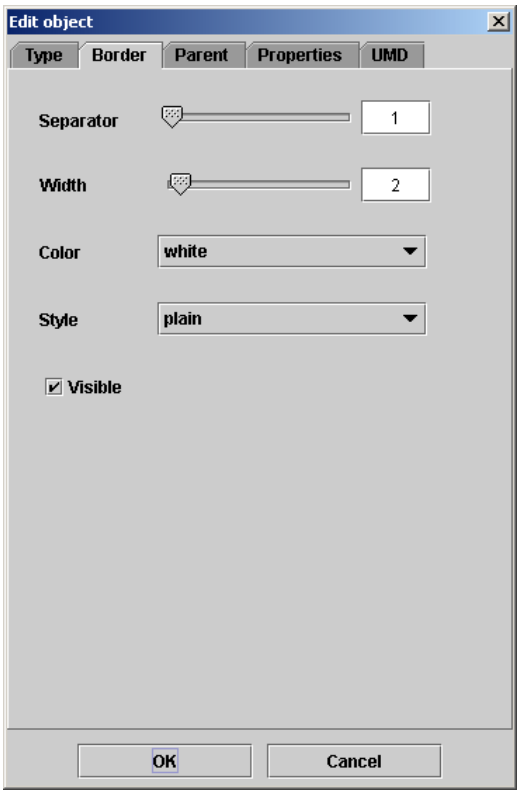


Figure 5-53
Edit object dialog box – Border

The **Separator** slider determines the width of an invisible border that embraces the object for better visibility. The **Width** slider ranges form 1 to 20 pixels. In the **Color** list the available colors are listed. The Border can be displayed in **plain** style or in **3D** style. With the **Visible** check box it can be selected whether the border shall be displayed or not.

Parent tab

On the **Parent** tab objects can be assigned to each other. One parent object can have multiple child objects. Some commands and operations are applied also on all child objects. These commands and operations are:

- Movement of parent object on the work area
- Changing the stacking of the parent object

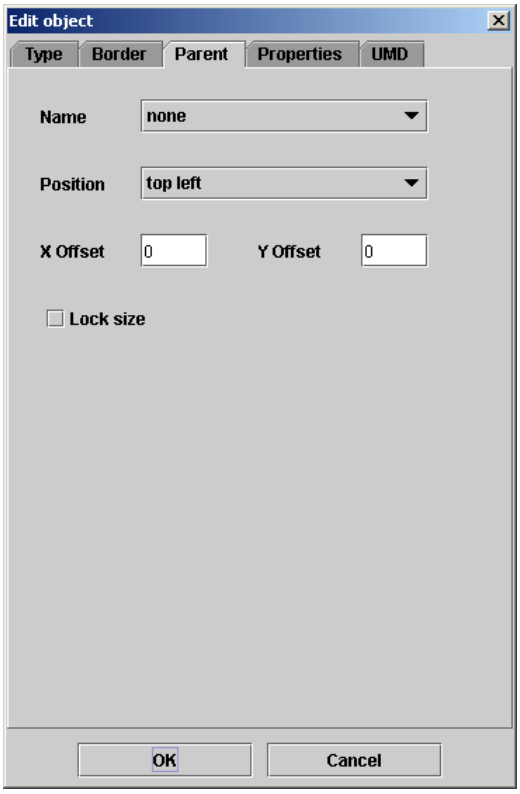


Figure 5-54
Edit object dialog box – Parent

An object can only serve as parent, if it has a unique name, which is also different from the object type identification. Only these names are listed in the **Name** list. An object can only be a child or a parent. No further relations are possible.

To assign a child object to a parent object, the name of the parent object has to be selected from the **Name** list. To split them again, **none** has to be selected. The position of the child object has to be indicated relative to the parent object (**Position**, **X Offset** and **Y Offset**). If no offset is inserted the child object will be positioned directly on the parent object. The child objects are always on top of the parent object in the stacking order. The stacking order of the child objects among each other remains. If the **Lock size** check box is selected, the size of the child object is tied to the size of the parent object. It will be increased and decreased in the same ratio as the parent object.

Deleting the parent object deletes also the child objects!

Changing the name of the parent object, splits the child objects form the parent object!

Properties tab

The functionality of the **Properties** tab depends on the object type.

Properties tab – Video

A video object displays a video or RGB source. Additional information can be arranged over or beside the video. On the **Properties** tab there are again nine tabs arranged, to configure all this information. The table below lists the options on the various tabs and their meaning:

Tab	Options	description
Video		Source selection and display properties:
	Source	A video or RGB source connected to the HYDRA must be selected
	Transparency level	Defines the transparency of overlying objects
	Scramble level	Defines the level of the scrambling
	Enabled / Streams	If the source is a streaming video source, then the selection of a video stream can be enabled. This overrules the stream selection from the source properties dialog; please refer to section 5.3.7 Setup source.
Audio		Properties of audio bars
	Width	Width of the audio bars
	Scale	Type of the scale (**BBC PPM**, **DIN**, **Nordic**, **VU**, **Ext VU** or **AES/EBU** is available, please refer also to section 5.3.7 Setup source – Audio Tab above, for more details about audio scales)
	Horizontal audio bars	Displays the audio bars horizontally instead of vertically
	Condense Audio	Horizontal bar is only half as wide as the video window; two bars can be shown next to each other.
	Plain	Scale of audio bar is visible or not
	Visible	Audio bar is visible or not

For audio sources of NGM-164 the scale type selected in this dialog has no influence on the scale used for data formatting but is only used as decoration. Instead the scale is defined in the setup NGM-164 dialog!

If one embedded or external audio source is displayed multiple times in different objects the same scale type has to be selected each time. Otherwise the last set scale type is used as scale type for all representations of this source!

Tab	Options	description
Tally		Properties of the tally
	Tally	A combination of two out of three tallies can be selected. They are displayed by default on the left and right side of the video. For Quad input cards please see the note below.
	Style	The color mentioned first is used to displays the left tally, the color mentioned as second is used to display the right tally.
	Shape	The settings **round** or **square** determine the shape of the tally. With the setting **fill** the background color of the UMD is used for the left tally and the right tally is not displayed! The UMD is displayed irrespective of the visible button on the UMD tab is checked or not.
	Position	Either the border of the object or the UMD or both can be used for the tally
	Disabled	Specifies the color of the tallies, when they are disabled: Either **default** colors as defined in **Style,** the **UMD color**, **border colors**, or a **user color** selected in the **Color** list below.
	Color	Defines the **user color**, if selected in the **Disabled** list
	Visible	Tally is visible or not

When configuring hardware tallies of a Quad input card, there are also three tallies offered even though for Quad SDI input card and Quad analog input card there are only two tallies available; only the combination of tally 1 and tally 2 may be selected!

For Streaming video card no tally can be selected at all!

Tab	Options	description
Error		Behavior of the video window in case of an alarm
	Color	Select the color of the object border to sign an alarm
	Clear	Select the color of the object border to sign a cleared alarm
	Show alarm name	The name of the most recent alarm that is active is displayed besides the window border. If several alarms are active a plus sign **+** behind the alarms name is displayed.
	Visible	The above settings are applied in case of an alarm or not.
VBI		Display of various types of vertical blanking interval (VBI).
	CC (US)	Display of closed captions (CC).
	Indicator	An indicator is displayed, if closed captions are available
	Visible	The selected channel is displayed.
	Use True Type Font	The usage of the true type font **Arial** for closed captions is activated. This allows better scaling capabilities for small windows and an enhanced character set.
	XDS (US)	Display of Extended data structure (XDS)
	Visible	Display XDS or not The XDS is displayed in the second line of the UMD, see section **Edit object – UMD tab**, below.
	TT (UK)	Display of teletext (TT).
	Indicator	An indicator is displayed if teletext is available
	Visible	Teletext is displayed
	TT page number	Selection of the respective teletext page
	Use True Type Font	The usage of the true type font **Arial** for teletext is activated. This allows better scaling capabilities for small windows and an enhanced character set.
	VITC	Display of Vertical interval time code (VITC)
	Visible	Display the VITC of the source or not The VITC is displayed in the form **hh:mm:ss:ff**, where **hh** is hours, **mm** is minutes, **ss** is seconds and **ff** is frames. If VITC is not present **–:–:–:–** is displayed instead.

Tab	Options	description
WSS		Properties of wide screen signaling (WSS) and video index information coding (VLI)
	Mode	Select which signal standard is provided; other choices are enabled depending on this
	Color	Select the color the indicator should have
	Aspect ratio (UK)	
	Follow aspect ratio changes	Aspect ratio of the video object gets always adapted to the aspect ratio of the video
	Default	Default aspect ratio if the WSS signal is not available
	Indicator	An indicator is displayed if WSS or VLI is available
	AFD (UK)	Selectable, if the mode WSS/AFD or VLI/AFD has been selected.
	Lines	With this option selected two red lines are displayed. They mark the area where the intrinsic video is displayed.
	Indicator	An indicator is displayed, if AFD is available.
	Show deviation from standard	The indicator changes to the error color, if the detected video signal deviates from the specified standard.
	ETSI (UK)	Selectable if the mode ETSI has been selected
	Lines	With this option selected two red lines are displayed. They mark the area where the intrinsic video is displayed.
	Indicator	An indicator is displayed if ETSI is available
Action Safe / Graphics Safe	**Enabled**	Activates the display of the action safe or graphics safe border
	Width	Thickness of the border in pixels
	Color	Color of the border; any color but black is visible on video
	Shadow Enabled	Activates the display of a border shadow
	Color	Color of the border shadow
	X-dist / Y-dist	Distance of the video border to the action safe or graphics safe border in steps of thousandths of the video dimensions
	4/3 / 16/9	Sets the default settings for videos with 4/3 or 16/9 aspect ratio
Markers	**Enabled**	Activates the display of two vertical markers
	Width	Thickness of the markers
	X-dist	Distance of the video border to the marker in steps of thousandths of the video dimensions
	Color	Color of the markers; any color but black is visible on video

Table 5-13
Options on the video properties tabs

Properties where a region is indicated, can only be selected if the respective region is selected for the module, please refer to section 5.3.4 Setup module**, otherwise these properties appear dimmed.**

Please refer to the HYDRA user's manual to see which properties are supported by which input cards.

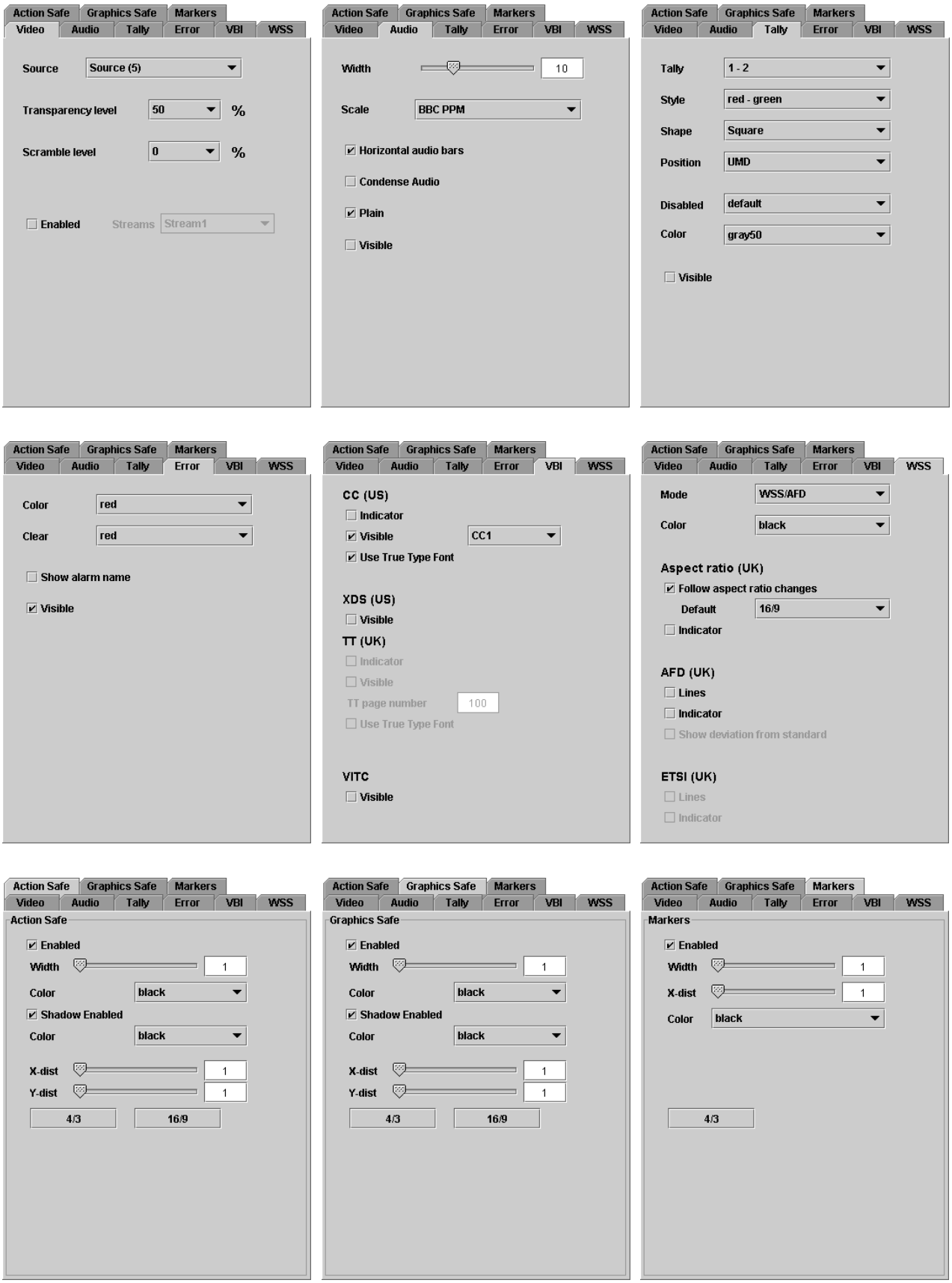


Figure 5-55
Edit object dialog box – Properties tabs of video

Properties tab – Audio

An audio object is used to display the audio sources assigned to one video or RGB signal. The video/RGB signal itself is not shown. For an audio object there are two tabs available on the **Properties** tab. The table below lists the options on the tabs and their meaning:

For audio sources of NGM-164 the scale type selected in this dialog has no influence on the scale used for data formatting but is only used as decoration. Instead the scale is defined in the setup NGM-164 dialog!

If one embedded or external audio source is displayed multiple times in different objects the same scale type has to be selected each time. Otherwise the last set scale type is used as scale type for all representations of this source!

Tab	Options	Description
Audio		Source selection and display properties:
	Source	Select a video or RGB source, connected to the HYDRA
	Width	Determine the width of the audio bars
	Background	Select an iSTUDIO color for the background.
	Scale	Select the type of the scale (**BBC PPM**, **DIN**, **Nordic**, **VU**, **Ext VU** or **AES/EBU** is available, please refer also to section 5.3.7 Setup source – Audio Tab above, for more details about audio scales)
	Horizontal audio bars	Displays the audio bars horizontally instead of vertically
	Condense Audio	Horizontal bar is only half as wide as the video window; two bars can be shown next to each other.
	Plain	Select whether the bars are displayed plain or not
Error		Behavior of the audio window in case of an alarm
	Color	Select the color of the object border to sign an alarm
	Clear	Select the color of the object border to sign a cleared alarm
	Show alarm name	The name of the most recent alarm that is active is displayed besides the window border. If several alarms are active a plus sign **+** behind the alarms name is displayed.
	Visible	The above settings are applied in case of an alarm, if selected.

Table 5-14
Options on the audio properties tabs

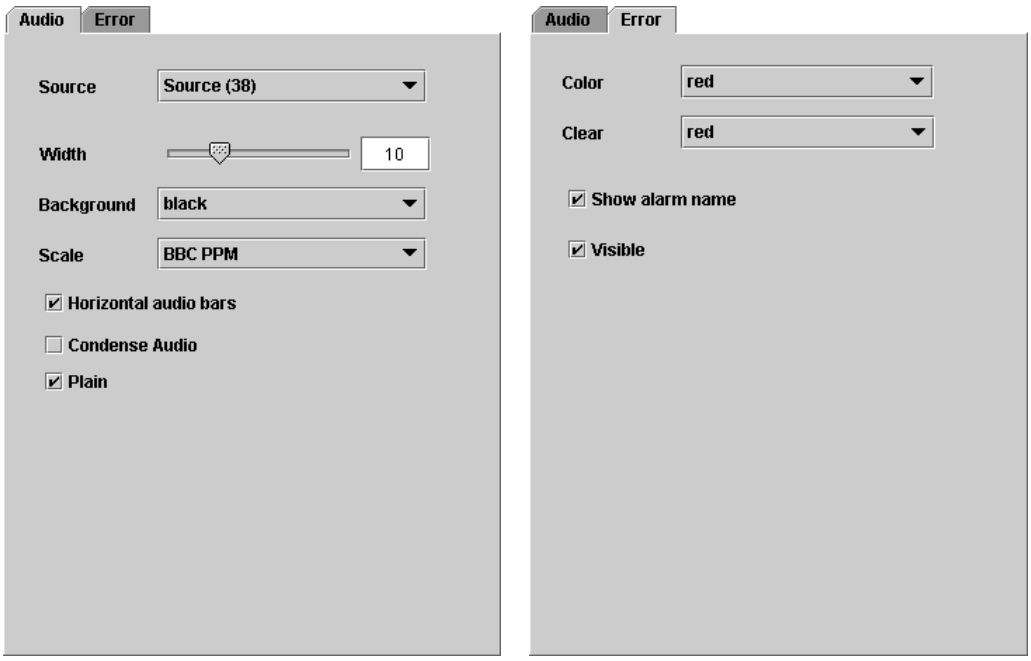


Figure 5-56
Edit object dialog box – Properties tabs of audio

Properties tab – Text

The text object is able to display up to 16 lines of text. By means of the **Properties** tab of the object up to four lines can be edited and displayed. If more than four lines shall be displayed, the XML open protocol can be used, please refer to section 11.3.9 Object related commands **(Adjust Text)**.

On the **Properties** tab text fields you can insert text. If the checkbox of a text field is selected, the text is displayed in the object with the alignment, font type and size, foreground and background color as specified in the lists on the lower part of the tab.

Properties tab – UMD

The UMD object serves to display in an object for its own up to 16 UMD lines. From the **Lines** list the required number of lines can be selected. According to this choice, on the left side the corresponding account of numbered items gets activated and their digit is displayed black instead of gray. To edit the properties of one UMD line first click on the respective item on the left. Its digit then turns to red instead of black. First select by means of the option buttons **Text** and **Variable**, if you want to enter the text for this UMD line manually into the text box behind **Text** or if you want to select a UMD variable of the XML open protocol from the variable list. Please refer also to section 11.3.9 Object related commands **(Adjust Variable)**.

The alignment of the writing can be assigned with the **Alignment** list, while font type and size can be assigned with the **Font** lists. The **Foreground** and **Background** lists determine the color of the writing and background. For UMD lines of type Variable the foreground and background can as well be set by means of the HYDRA open protocol. In this case, the checkboxes before the lists must be cleared. The color of the separator between the single UMD lines is set with the **Separator** list, its height is set with the **Height** bar.

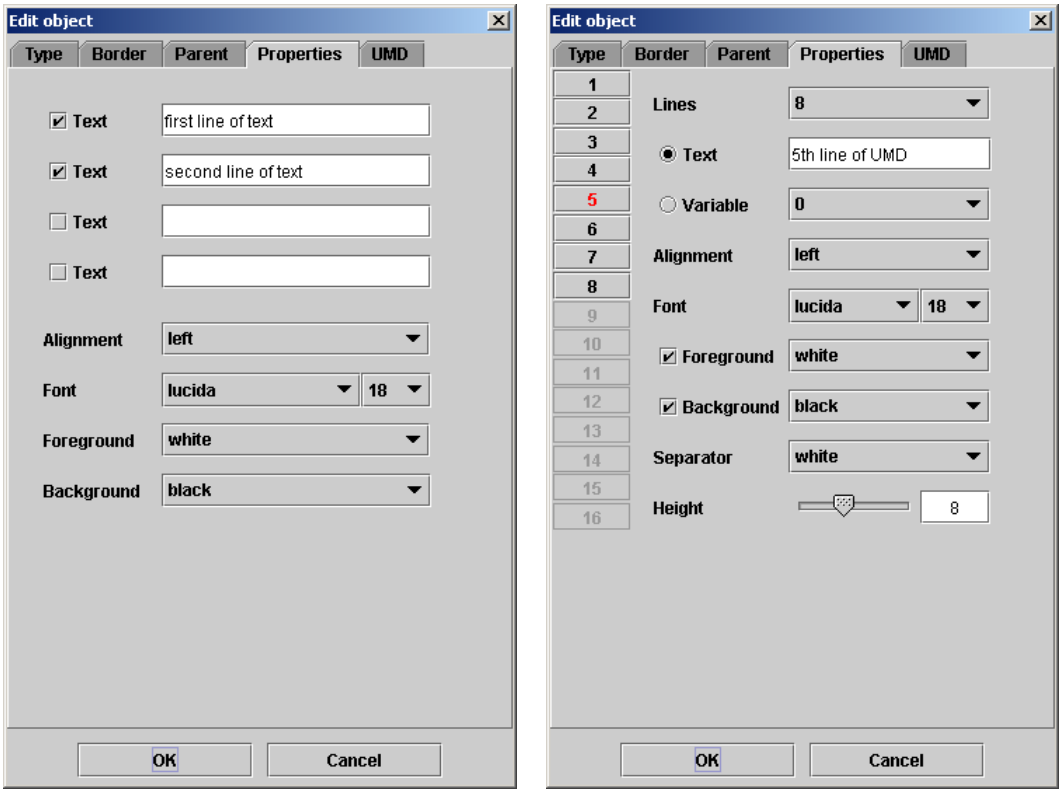


Figure 5-57
Edit object dialog box – Properties of text (left) and Properties of UMD (right)

Properties tab – Tally

The **Tally** object displays a matrix of up to 16 tallies. With the X and Y lists the number of tallies in X (horizontal) and Y (vertical) direction can be determined. First select the number of tallies in X direction because the number of available tallies in Y direction depends on this. Depending on this selection on the left side there is displayed the corresponding amount of items with their matrix coordinates. With the **Background** and **Grid** lists the colors of background and grid of the whole object is set. **Width** determines the width of the grid lines in pixels.

Selecting a tally item on the left side of the dialog enables to edit its properties. Either a **Source** tally or a source independent **Software** tally can be selected. A source tally is a hardware or software tally as used in the **Setup source** dialog. For such a tally one number of the **Source** list must be selected. This list considers 3 tallies per source in the order of the sources, please see below:

Number in the list	Tally
0	Tally 1 of source 0
1	Tally 2 of source 0
2	Tally 3 of source 0
3	Tally 1 of source 1
...	...

The source independent software tallies are defined in the HYDRA open protocol, please refer also to section 11.3.10 Tally related commands **(Adjust tally)**). The **Software** list provides 256 entries (0 - 255) for such predefined tallies.

With **Shape** the shape of the tally can be set to round or square. **On** and **Off** define the color for the on and off state of the tally.

The **state** checkbox is only applicable, if software tallies are selected.

If the **state** checkbox is selected, then the tally colors are used as defined with **On** and **Off** above and the state of the tally can be switched with the **adjusttally** command of the Hydra open protocol.

If the **state** checkbox is deselected, then the color of the tally can be overwritten with the **adjusttally** command. Please refer to section 11.3.10 Tally related commands for more detailed information.

If the **Text** checkbox is selected, a text entered in the text box behind it is displayed on top of the tally. With **Foreground**, **Font** and **Alignment** the appearance of the text can be determined.

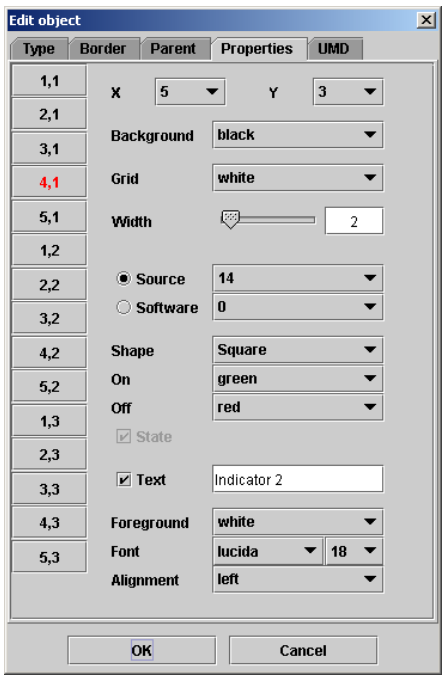


Figure 5-58
Edit object dialog box –Properties of tally; upper part (left) and lower part (right)

Properties tab – Logo

With a logo-object a bitmap can be displayed on the projection module. Non-animated as well as animated bitmaps can be displayed. The logo can be loaded. Non-animated logos may have gif, jpg or bmp format. Animated logos may have gif, mpg or avi format.

Whether the checkbox **Animation** is selected or not, determines if the **Name** list shows the animated or the non-animated bitmaps.

To transfer bitmaps to the HYDRA, please see section 8.1 Data structure and data access.

Properties tab – Clock

A clock-object displays a clock. Different types are available. If the **Digital** checkbox is disabled, then an analog clock is displayed. If in addition the **Logo-clock** checkbox is enabled, then a bitmap is used as background for the clock. The bitmap could be e.g. a logo. The bitmap can be selected from the list located to the right of the checkbox. How to add files to this list can be seen in section 8.1 Data structure and data access. When enabling the logo-clock, then the digital checkbox gets automatically disabled.

If the checkbox **Digital** as enabled, then a clock with digital display is used. In addition it can be chosen whether the digits are morphing or not and if it is counted up to 12 or up to 24 hours.

Usually a clock displays the time according to the timezone specified in the module properties. If the checkbox **Timezone** is enabled, then for this clock a different timezone can be selected. After clicking the **...** button appears the same dialog as explained in section 5.3.4 Setup module. In addition time offset can be specified. Just select the respective number of hours from the Offset list. This property can be used for analog clocks or digital clocks, but only after morphing is selected.

Finally for the **Foreground** and the **Background** of the clock the iSTUDIO colors are available.

When clocks are put ahead due to day light savings or for other reasons clocks will adapt to this time within one minute.

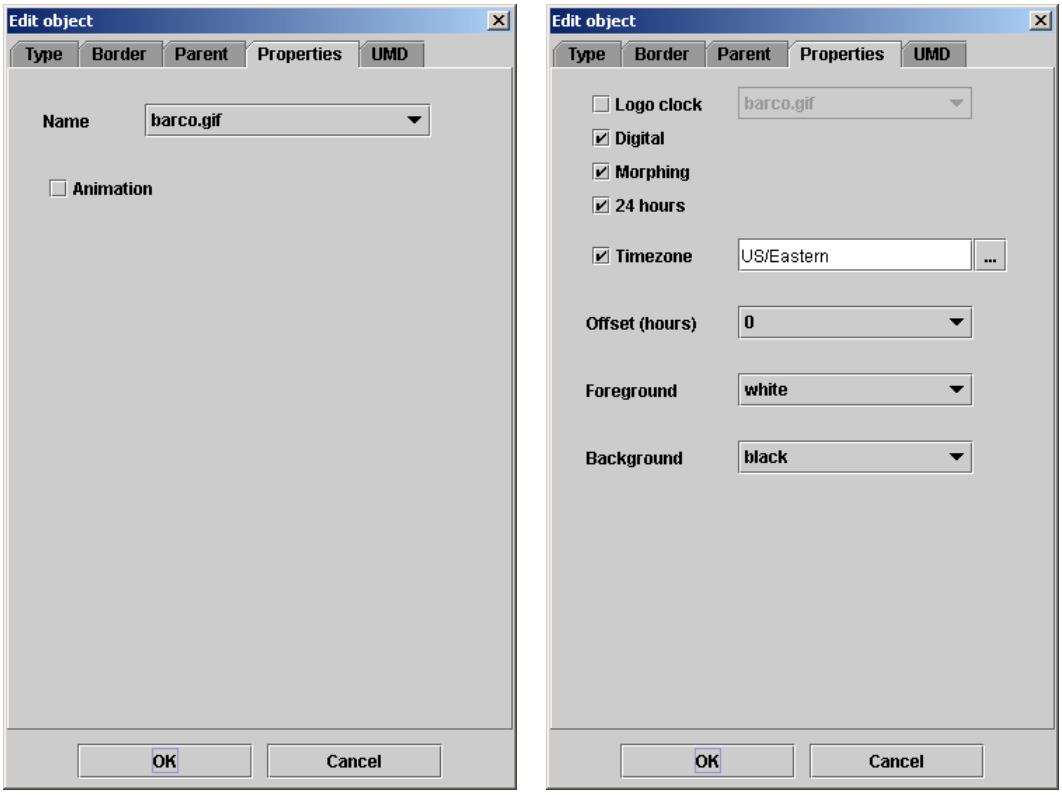


Figure 5-59
Edit object dialog box – Properties of logo (left) and Properties of clock (right)

Properties tab – Timer

The timer counts downwards to the indicated time. When the time is reached it counts onwards. The time can either be inserted in 24 hours mode or in am/pm mode. Therefore the respective option button must be selected. With the **Tomorrow** checkbox additional 24 hours are added to the specified time. With the **Foreground** and **Background** list the colors for the foreground and the background can be chosen.

Properties tab – Stopwatch

The **Stopwatch** object provides advanced timer functionality. Start and stop point of the timer must be indicated (**Start at** and **Stop at**). A time period of up to 24 hours can be set. Time is specified in the form **HH.MM.SS** or if the **Frames** checkbox is selected in the form **HH.MM.SS.FF** with the frames counting from 0 to 24 (for PAL sources only).

If the **Countdown** checkbox is selected it is counted downwards from the indicated time difference unless zero. If not selected it counts the opposite way around.

Alternatively the object can be used as a clock which shows the time of an LTC signal which is inserted via the D15 connector of the overlay input card. Therefore enable the **use LTC** checkbox.

By means of the lists in the lower part of the tab the appearance of the object can be determined. **Font** specifies the font type and size, **Foreground** specifies the color of the writing before start time and at the beginning of counting, **Transition** is the color of the writing in the last 10 seconds before stop time is reached. At stop time the writing gets the color determined in the **Destination** list. The **Background** color remains all the time unchanged.

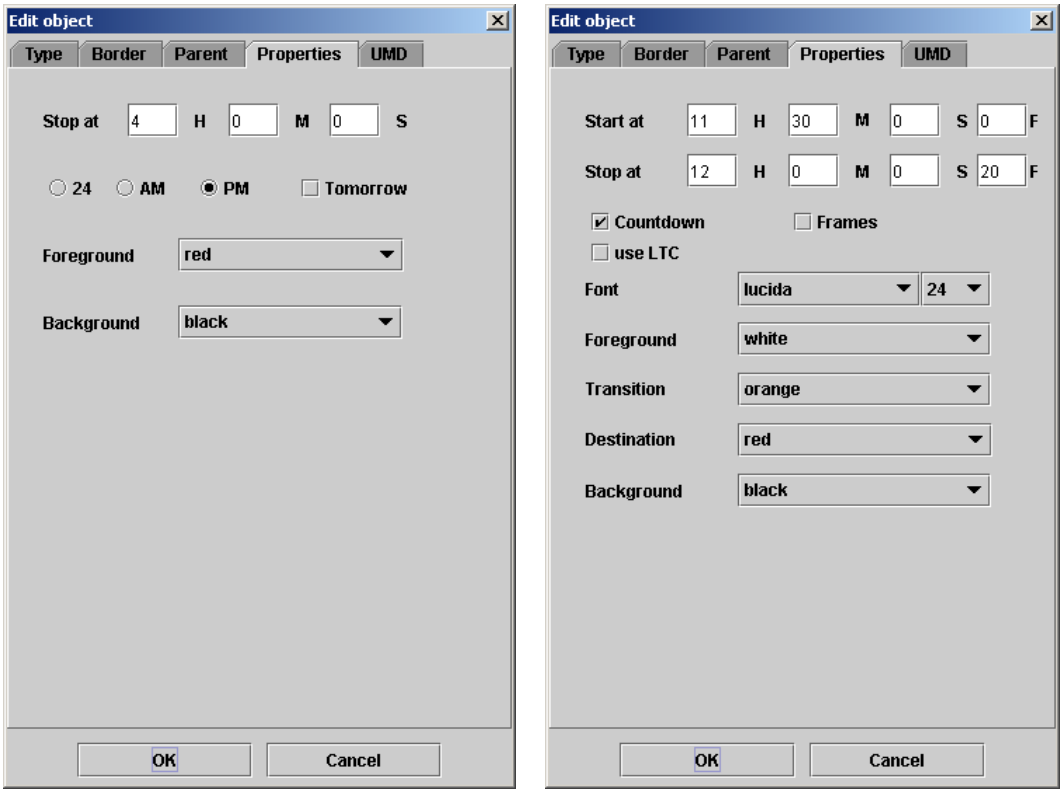


Figure 5-60
Edit object dialog box – Properties of timer (left) and Properties of stopwatch (right)

Properties tab – Alarm

The alarm object provides a list of the alarms that occur on the HYDRA module that displays the alarm object. The alarms are sorted by their occurrence, where the latest alarm is listed most top. The alarm object can be sized as big as required. If there are anyhow more alarms than fit in the object, the least recent once will not be displayed.

By means of the lists on the **Properties** tab, the font type and size of the writing and its color (**Foreground**) can be chosen as well as the color of the grid and of the background.

Properties tab – Viewer

The viewer serves to display different viewer applications. This could be for example a remote monitor of a WinVNC server or a Pixelmetrix DVStation desktop viewer. The VNC software to setup a remote monitor and the viewer can be found on the iSTUDIO documentation CD ROM **R5976593** in the directory:

```
3rdparty/research_att/vnc_x86_win32/winvnc/
```

Please see also the VNC documentation for the installation of the WinVNC server.

Due to performance reasons it is recommended to use not more than four viewer objects at the same time.

Within the **Properties** tab the IP address of the remote computer, whose display shall be showed must be inserted in the **Address** box. The **Pixelmetrix** checkbox must only be selected for a Pixelmetrix DVStation desktop viewer.

If the **Scaling** checkbox is selected the content of the remote monitor is scaled to fit the viewer object. Otherwise the upper left corner of the monitor content is fit to the upper left corner of the viewer object. It depends on the size of the viewer object, if the whole monitor content can be seen.

With the **Filtering** checkbox a filter can be used to get a higher display quality. This is at the expense of processing power of the HYDRA. **Black and white** can only be activated if filtering is also checked. **Black and white** has the advantage to demand less processing power than the pure filtering. We recommend trying out how much filtering is possible without slowing down the HYDRA too much.

Please refer to section 5.6.9 Show viewer for an instruction how for test purposes the content of a viewer object can be displayed on the monitor of the operator PC.

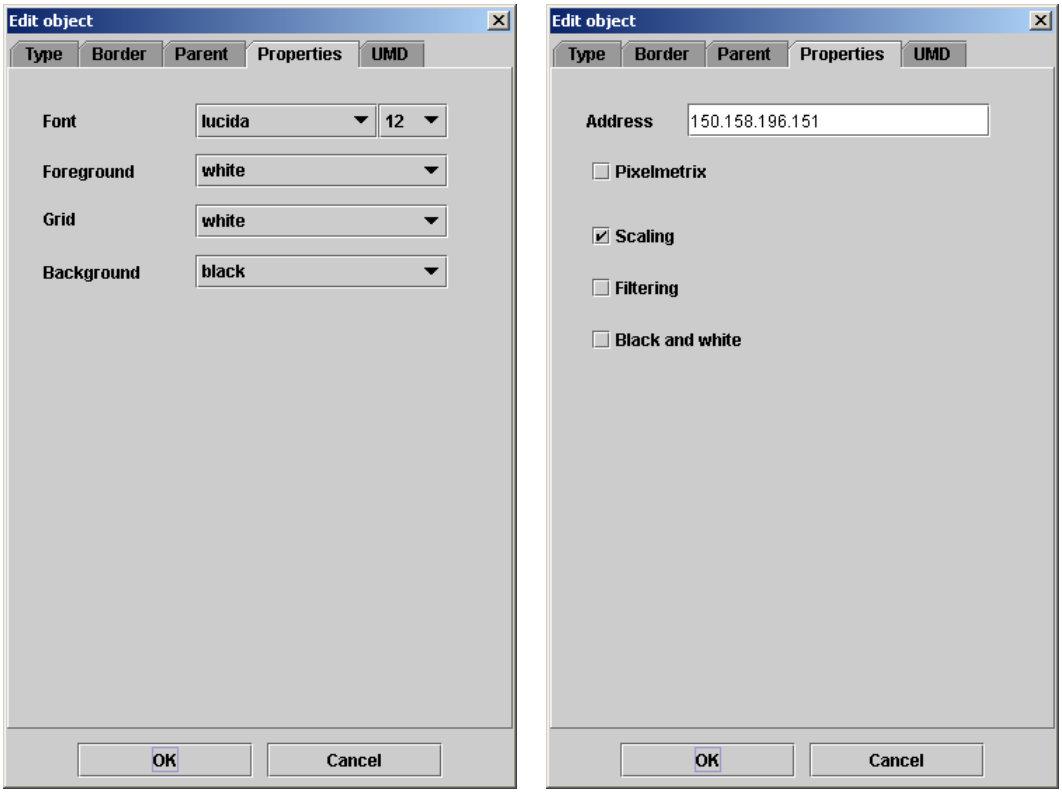


Figure 5-61
Edit object dialog box – Properties of alarm (left) and Properties of viewer (right)

Properties tab – Application

The **Properties** tab for an application object contains a command line to execute an application from the directory `/home/hydra/flash/apps` of HYDRA.

With the **Environment** field an environment variable can be set for the application. This has only an impact on this application but not to any other application. With the **Environment** field e.g. the local time for a clock application could be set.

If an application has no displaying function the **No window** checkbox can be selected. This enables to execute an application without displaying a window on the projection module.

To add applications to the HYDRA, please see section 8.1.1 Data access on Hydra.

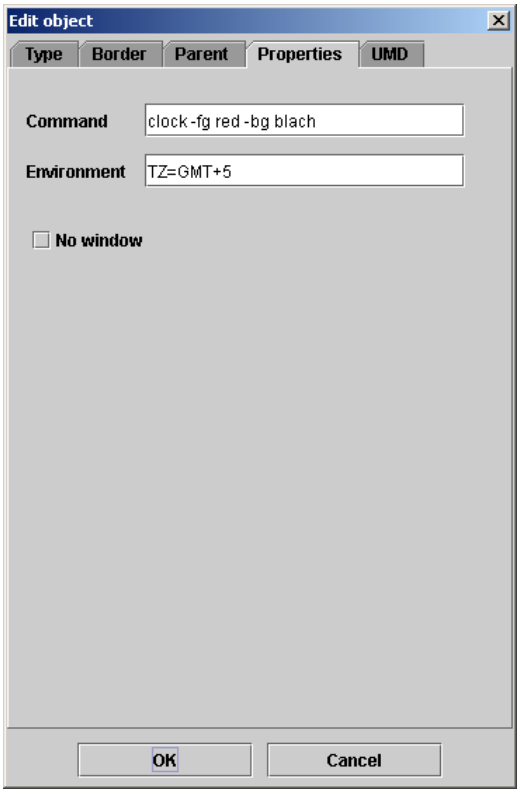


Figure 5-62
Edit object dialog box – Properties of application

UMD tab

On the **UMD** tab the display of an under monitor display (UMD) can be defined. It provides two lines to display additional text.

- The **Visible** checkbox activates or deactivates the UMD lines. The content of the lines is configured individually:
- If **Visible** is checked the first line is displayed at any rate.
- If the **Text** checkbox of the first line is selected, the text inserted in the text box is displayed. If it is deselected the video name is displayed instead. The video name gets specified in the **Module properties** dialog box on the **Sources** tab, please refer to section 5.3.4 Setup module.
- If the **Text** checkbox of the second line is not selected no second UMD line is displayed. If it is selected either the text of the second text box or XDS information is displayed. XDS is displayed if it is made visible in the **Edit Object – Properties Tab** of a video object.

The other options on that tab define the look and position of the UMD.

- The **Font**, **Foreground**, **Background** lists allow to select the font type and size of the UMD and the color of text and background.
- The **position** list defines where the UMD is displayed. Horizontal alignment **left**, **right**, **middle** is combined with vertical alignment **top**, **bottom**. If the two UMD lines are split this entry refers to the first line. The second line is displayed on the other vertical position.
- The **separator** checkbox defines whether there is a separator in a selectable color between UMD and the content of the object.
- The **Inside** checkbox can only be used for video objects. If selected the text is displayed on the video instead of over or under it.
- The **Splitted** checkbox determines if two lines are displayed one under each other or separately one on top and one on bottom of the object. The **Splitted** checkbox can only be used if the second line of UMD is selected.

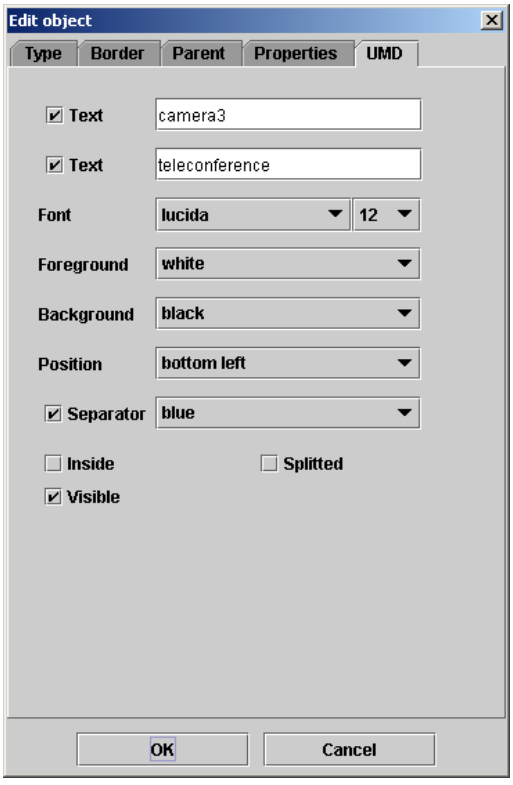


Figure 5-63
Edit object dialog box – UMD

5.6.5 Cut, copy, paste and paste new object properties

The following commands can be used to assign properties from one object to another object. The original object might be deleted or left unchanged; the properties can be assigned to an existing object or by creating a new one. Please refer also to section 5.5.3 Load, cut and paste object properties where properties are assigned to a group of objects.

Cut object

The command **Cut object** copies the properties of the object (except size, position and source) and deletes the object from the work area. The object properties can be assigned to another object, see **Paste object** and **Paste new object**, below.

Also the button from the button bar or the shortcut key **Ctrl+X** can be used.

Copy object

The command **Copy object** copies the properties of the selected object (except position and source). The object properties can be assigned to another object, see **Paste object** and **Paste new object**, below. Also the button (**Copy object**) from the button bar or the shortcut key **Ctrl+C** can be used.

Paste object

After object-properties have been copied, another object can be selected by a mouse click on it. The command **Paste object** assigns the properties (except the size and source) to the now selected object. If a video object was copied, then source (0) gets assigned or if the object had a source before this source is obtained.

Also the button (**Paste object**) from the button bar or the shortcut key **Ctrl+V** can be used.

Paste new object

After object-properties have been copied, they can be assigned to a new object. The command **Paste new object** creates a new object with these properties and locates it in the upper left corner. The name of the new object is the name of the original object where a running number is appended. In case of a video object the source of the new object is the first unused source of the sources list.

Also the button (**Paste new object**) from the button bar or the shortcut key **Alt+V** can be used.

5.6.6 Stacking order of an object

The **Move Object** commands serve to determine the position of an object in the stacking order. Please refer also to section 5.5.4 Stacking order of objects where the stacking order is assigned to a group of objects.

Move object to front

The stacking order of objects can be changed. The command **Move object to front** puts the selected object to the very front.

Also the button (**Move object to front**) from the button bar or the shortcut key **Ctrl+F** can be used.

Move object to back

The command **Move object to back** puts the selected object to the very back.

Also the button (**Move object to back**) from the button bar or the shortcut key **Ctrl+B** can be used.

5.6.7 Hide/unhide object

With the command **Hide/unhide object**, it can be chosen whether the selected object shall be displayed on the projection module or not. With the default setting an object is visible as soon as an object type is assigned. To hide an object, choose the command **Hide/unhide object**. If an object is hidden, it is crossed out on the work area. After a refresh it is no longer visible on the display area. The default for a new object is to be visible. Please refer also to section 5.5.5 Hide/unhide objects where a group of objects gets hidden/unhidden.

Also the button (**Hide/unhide object**) from the button bar or the shortcut key **Ctrl+H** can be used.

5.6.8 Object sizing

The following three commands enable a fast assignment of an object to the dimensions of the grid.

Fit object into grid

The command **Fit object into grid** expands the selected object to the borders of all cells of the grid that it covers.

Also the button (**Fit object into grid**) from the button bar or the shortcut key **Ctrl+T** can be used.

If in the Edit object dialog the aspect ratio of the object was fixed, this aspect ratio remains and the command Fit object into grid just adjusts the width of the object to the width of the covered grid cells!

Size object to grid

The command **Size object to grid** adjusts the size of the selected object to the size of one grid cell. The upper left corner of the object keeps its position.

Also the button (**Size object to grid**) from the button bar or the shortcut key **Ctrl+S** can be used.

If in the Edit object dialog the aspect ratio of the object was fixed, this aspect ratio remains and the command Size object to grid just adjusts the width of the object to the width of on grid cell!

Size object to screen

The command **Size object to screen** expands the selected object to the size of the whole work area.

Also the button (**Size object to screen**) from the button bar or the shortcut key **Alt+S** can be used.

If in the Edit object dialog the aspect ratio of the object was fixed, this aspect ratio remains and the command Size object to screen just adjusts the width of the object to the width of the screen!

5.6.9 Show viewer

With the command **Show viewer** the content of a selected viewer object can be displayed in a separate window directly on the monitor connected to the operator PC. To be able to show a viewer content locally, the Barco Java Applet must be confirmed when starting the iStudio GUI; please refer to section 3.2.1 Connecting from a user PC to the Hydra. Before the window shows up a dialog asks for the connection password. This is by default **glad01**.

A viewer window on the operator PC could look like this:

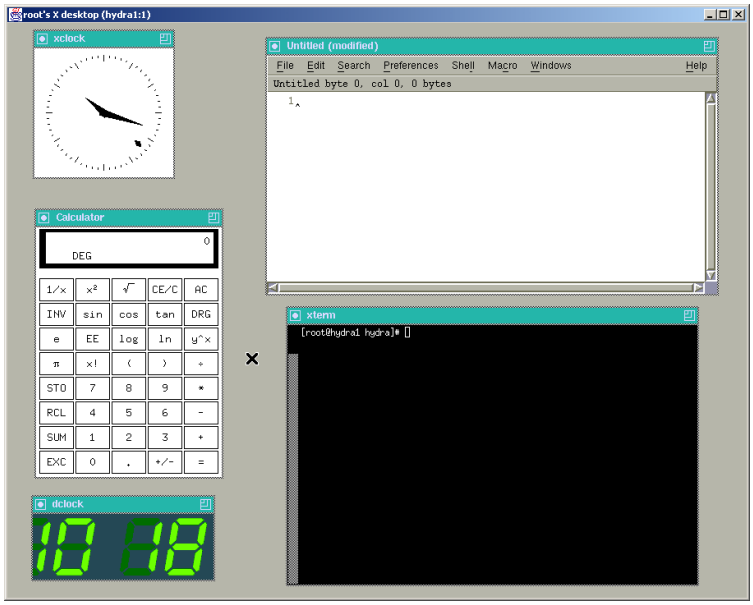


Figure 5-64
Viewer window on the operator PC

5.7 Grid

The functionality of the grid can be managed with the commands of the **Grid** menu.

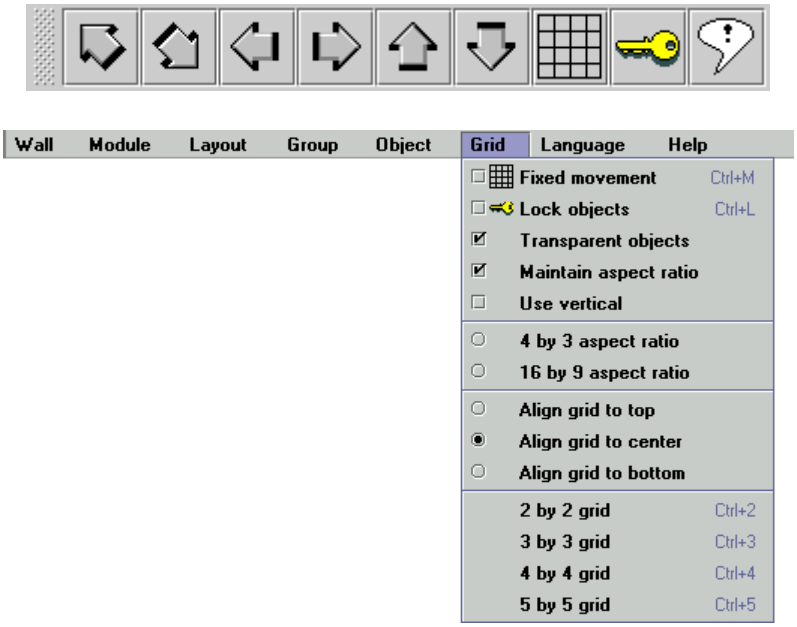


Figure 5-65
Grid toolbar and Grid menu

5.7.1 Fixed movement

If the command **Fixed movement** is checked, an object will be lined up with the grid as soon as it is moved. The upper left corner of the object will be positioned to the upper left corner of the grid cell on which the mouse drags the object.

If the command **Fixed movement** is unchecked, an object can be moved to any place within the work area.

To check and uncheck **Fixed movement**, use also the toggle button on the tool bar to switch between the two modes. The red corner indicates that **Fixed movement** is checked:

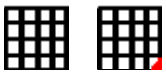


Figure 5-66
Toggle button – Fixed movement

To check or uncheck **Fixed movement**, use also the shortcut key **Ctrl+M**.

The easiest way to move objects if Fixed movement is checked, is to position the mouse in the upper left corner of the object!

5.7.2 Lock objects

If the command **Lock objects** is checked, objects can not be moved or sized by means of the mouse. This prevents to move them if not intended. Nevertheless objects can be moved and sized with the **Edit object** menu.

To check and uncheck **Lock objects**, alternatively use the shortcut key **Ctrl+L or** the toggle button on the tool bar. The red corner indicates that **Lock objects** is checked:

Figure 5-67
Toggle button – Lock objects

5.7.3 Transparent objects

If objects on the work area overlap, they can either be displayed transparent or non-transparent.

- Transparent means, that the borders of the objects behind the one on the top will be visible on the work area as well, but in a narrow style.
- Non-transparent means, that the borders of the objects behind the one on the top will not be visible on the work area.

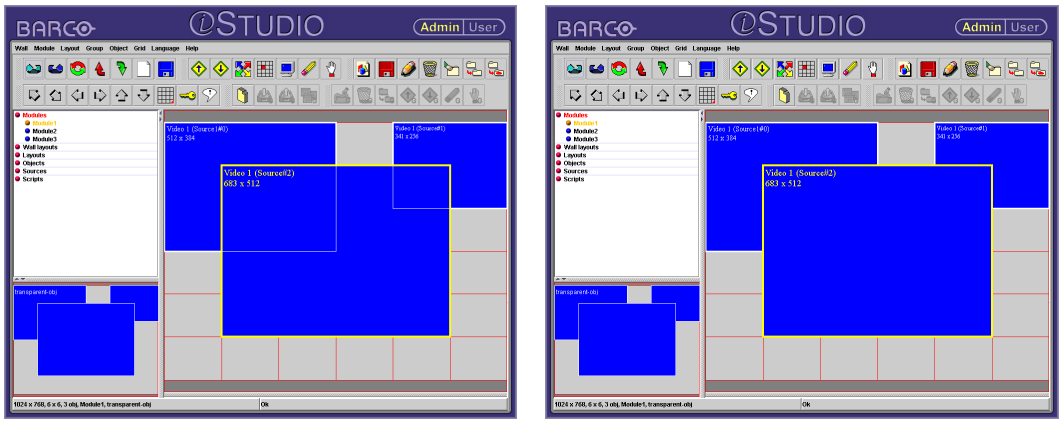


Figure 5-68
Transparent and non-transparent objects in the work area

The command transparent objects determines the appearance of objects on the work area. To determine the transparency of the content of an object, please refer to section 5.6.4 Edit object... **- Type Tab.**

5.7.4 Maintain aspect ratio

If the command **Maintain aspect ratio** is checked, the used work area and display area is of the same aspect ratio as the used projection module, but the area reserved in the GUI to show the work and display area might be of another aspect ratio. This means that there might be some extra space that is not used for the work and display area; it is displayed in a dark Grey above and below (left and right) of the used area.

If the command is not checked the whole available area is used to display the work area and the display area, but the aspect ratio is not necessarily the same as the one of the projection module.

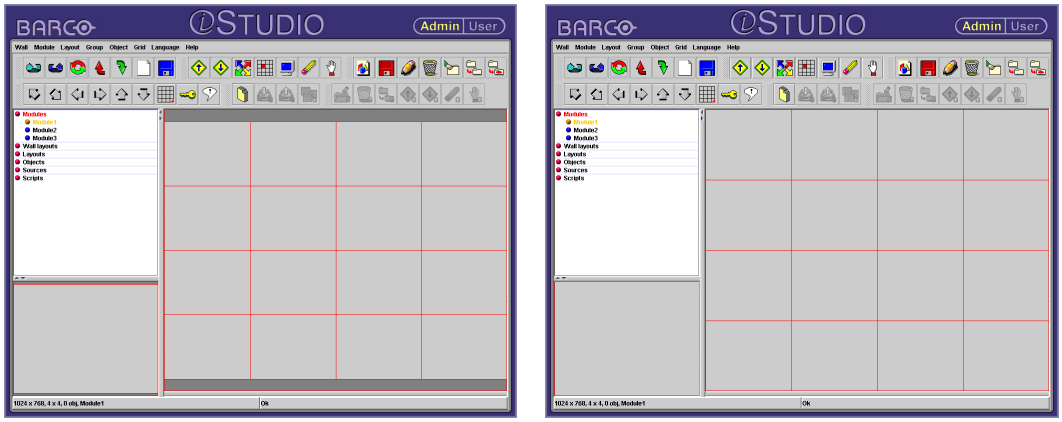


Figure 5-69
Work and display area with maintained aspect ratio (left)
and with the whole area used (right)

5.7.5 Use vertical

The **Use vertical** command has only an effect if the command **4 by 3 aspect ratio** or **16 by 9 aspect ratio** is checked, please refer to section 5.7.6 Aspect ratio below. If grid and display are of different aspect ratio, it might not be possible to completely fill the work area with grid cells.

The cells can either be fit horizontally into the work area or vertically. Accordingly the space not covered by grid cells is located on top and bottom of the work area or on its left and right side. By default the grid is horizontally fit, if **Use vertical** is checked the grid is fit vertically into the work area. For the alignment of the grid please refer also to section 5.7.7 Align grid.

The figure below shows a work area with a 4×3 resolution where the command **16 by 9 aspect ratio** is checked. On the left default settings are applied, **Use vertical** is not checked. Space not covered by the grid is above and below the grid. On the right the command **Use vertical** checked. Now the space not covered by the grid is on the left and right side.

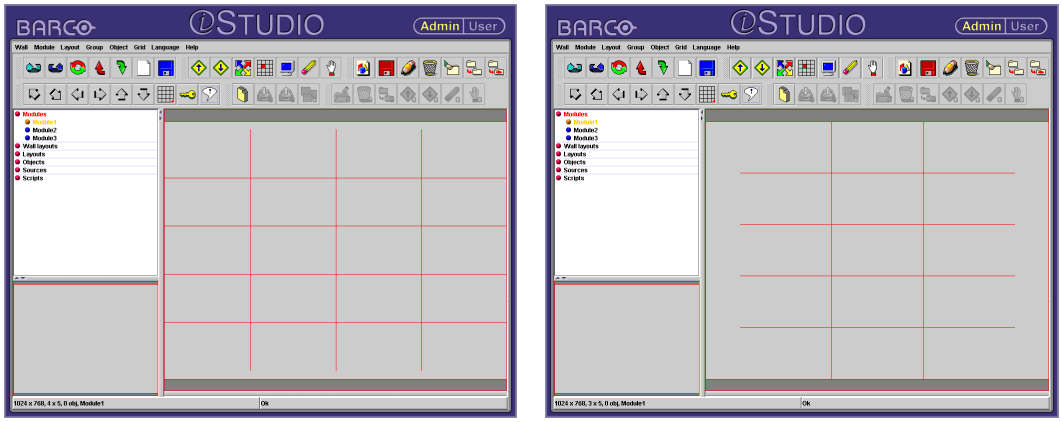


Figure 5-70
Work area with default setting (left)
and with Use vertical enabled (right)

5.7.6 Aspect ratio

The command **4 by 3 aspect ratio** or **16 by 9 aspect ratio** determines the aspect ratio of the grid cells to 4×3 or to 16×9. Depending on the aspect ratio of the projection module not the whole work area will fit into the grid. The command **Use vertical** helps to fit the grid in horizontal or vertical direction into the work area. The command **Align grid to top/bottom/left/right/center** helps to align the grid within the work area.

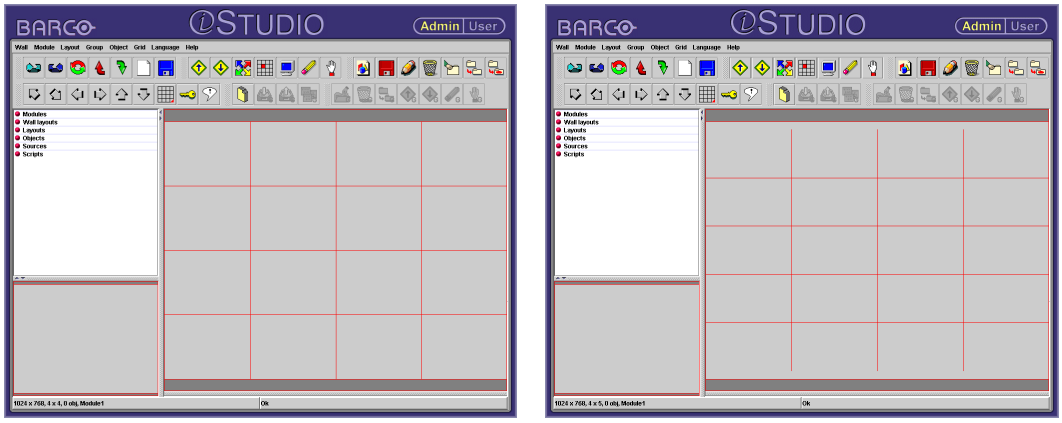


Figure 5-71
4 by 3 aspect ratio within XGA resolution (left)
and 16 by 9 aspect ratio within XGA resolution (right)

5.7.7 Align grid

If grid and display are of different aspect ratio, there might be space not covered by the grid on the edges of the display area. The commands **Align grid to top/button/left/right/center** determine where this space is located.

Dependent if **Use vertical** is selected or not, either the commands for horizontal or vertical alignment are applicable. The commands for grid alignment have only an effect if the command **4 by 3 aspect ratio** or **16 by 9 aspect ratio** is checked. Please refer to section 5.7.5 Use vertical and 5.7.6 Aspect ratio above.

5.7.8 Standard grid configurations

The command **2 by 2 grid** creates a grid with 2×2 cells on the work area. Respectively a grid with 3×3, 4×4 or 5×5 cells can easily be created.

Depending on the resolution of the display area and the aspect ratio of the grid cells, it may not be possible to have the same amount of cells in horizontal and in vertical direction. In this case and if **Use vertical** is checked, the wished number of cells will be fit in vertical direction into the work area, the number of horizontal cells will be calculated respectively. If **Use vertical** is not checked the horizontal number of cells will fit into the display area.

To display the above-mentioned grids, alternatively use the shortcut keys **Ctrl+2**, **Ctrl+3**, **Ctrl+4** or **Ctrl+5**.

5.7.9 Increasing and decreasing the grid

The following buttons help to configure the grid. Their functionality is not accessible by means of the menu.

Decrease grid in both directions

The **decrease grid in both directions** button reduces the number of grid rows and columns by one.

Increase grid in both directions

The **increase grid in both directions** button raises the number of grid rows and columns by one.

Decrease grid in horizontal direction

The **decrease grid in horizontal direction** button reduces the number of grid columns by one. If a fixed aspect ratio for the grid is selected the rows of the grid are reduced accordingly.

Increase grid in horizontal direction

The **increase grid in horizontal direction** button raises the number of grid columns by one. If a fixed aspect ratio for the grid is selected the rows of the grid are raised accordingly.

Decrease grid in vertical direction

The **decrease grid in vertical direction** button reduces the number of grid rows by one. If a fixed aspect ratio for the grid is selected the columns of the grid are reduced accordingly.

Increase grid in vertical direction

The in**crease grid in vertical direction** button raises the number of grid rows by one. If a fixed aspect ratio for the grid is selected the columns of the grid are raised accordingly.

The maximal number of grid rows or columns is 25.

5.8 Language

The language of the user interface can be selected with the option buttons in the **Language** menu.

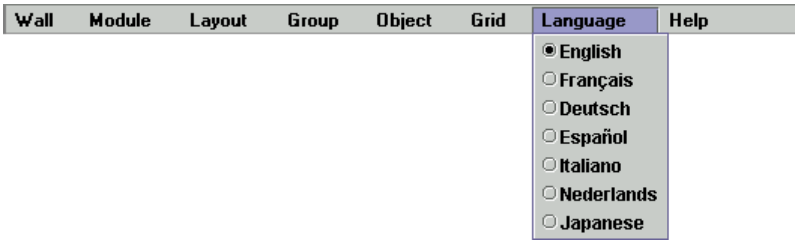


Figure 5-72
Language menu

To display Japanese characters by the Hydra, in the dialogs of the user interface where text is edited the font Mincho or Gothics must be selected, please refer also to section 4.3.2 Japanese fonts **!**

5.9 Release information

You find the release information in the **Help** menu under the topic **About ...**.

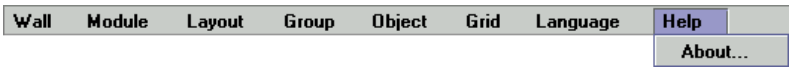


Figure 5-73
Help menu

Figure 5-74
About dialog

6 Further GUI elements

This chapter lists and explains all elements of the GUI of iStudio not explained in the chapter above. This are the administrator and user log in buttons, the tree and the state- and message bars.

6.1 Administrator / user mode

iSTUDIO can be operated in two access modes: as administrator or as user. The following list shows in which situations they should be used:

- **administrator**
  The administrator account provides full access to the whole functionality of the iSTUDIO software.
- **user**
  The administrator can adapt the functionality of the user account. This enables to protect single interactions, like switching modules off or on, deleting layouts, etc. Working with the user mode helps avoiding changing settings and configurations accidentally.

The administrator configures the user access by means of the **Setup user mode** dialog box. Please see section 5.2.6 User settings for a detailed description of the possible privileges of the user.

The **Admin** and **User** button respectively can be used to log in for an iSTUDIO session or if already logged in, to end the current session and start anew with different access mode. When clicking on the **Admin** or **User** button the login window appears, please refer also to section 3.2.1 Connecting from a user PC to the Hydra:

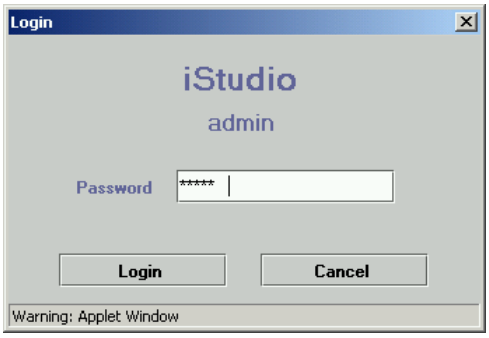


Figure 6-1
Login window

6.2 Tree

This section provides detailed information of how to work with the tree. The tree provides easy and fast access to different kind of basic functionality. Even though there are two different appearances of the tree – standard view tree and fast view tree – the functionality is the same. (To switch between both views please refer to section 5.2.6 User settings.)

- **Modules**
  Selecting one of multiple HYDRAS for HYDRA settings, layout assignment etc
- **Wall layouts**
  Selecting a wall layout displays it directly on the connected projection modules
- **Layouts**
  Displaying a specific layout on the work area
- **Objects**
  Assigning objects properties to an object which is selected on the work area
- **Sources**
  Assigning a source to a video or audio object
- **Scripts**
  Running a script

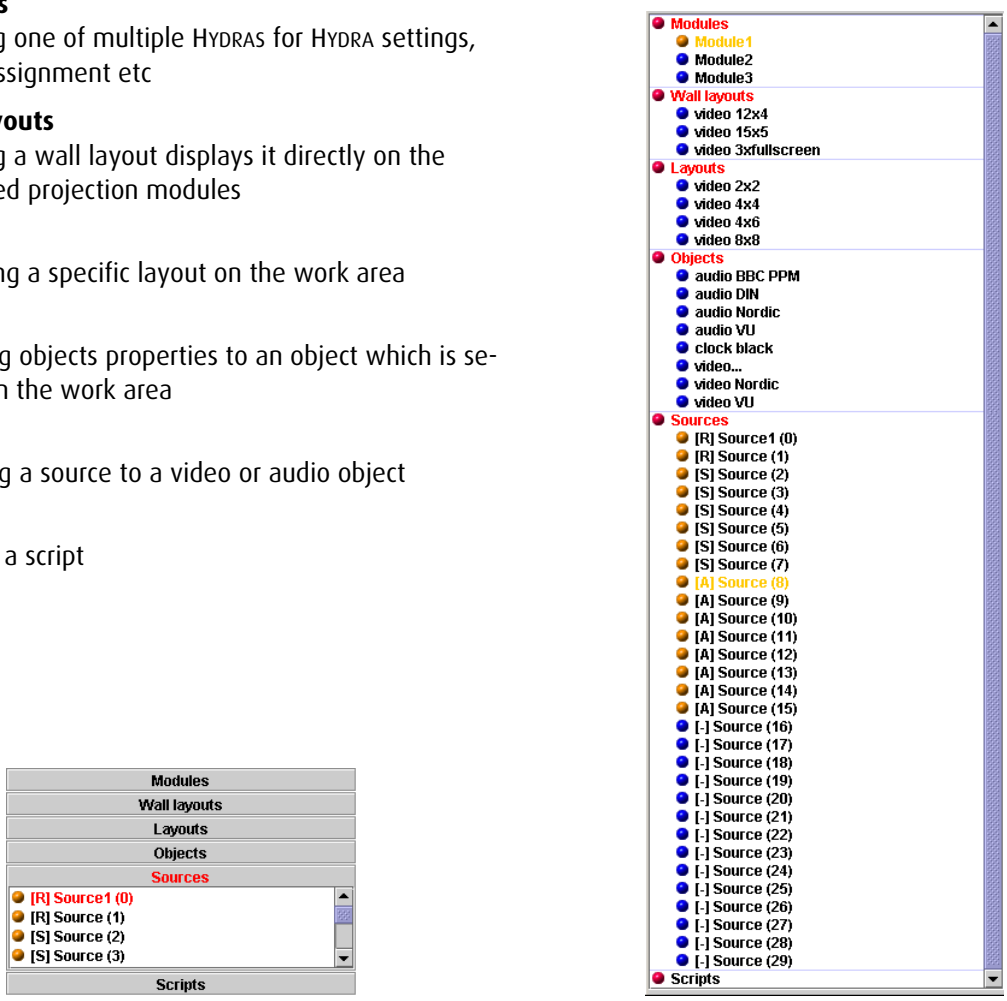


Figure 6-2
Tree – fast view tree (left) and standard view tree (right)

Additional functionality can be used by means of the shortcut menu that appears by a right mouse click on some particular entries. Please see the table below for the whole available functionality:

right click on:		provides access to:
modules	main item	halt wall, reboot wall, reset wall, reset software (wall)
	individual entry	halt module, reboot module, reset module, reset software (module)
wall layouts	main item	new-, edit-, load-, delete wall layout dialog
	individual entry	new-, edit-, load-, delete wall layout dialog, update layout
layouts	main item	new layout, load-, delete- setup layout dialog
	individual entry	new layout, load layout, delete layout, setup layout, update layout

Table 6-1
Entries of the shortcut menu available via the tree

Standard view tree

In standard view tree the items of the tree are arranged in a folder like structure. To expand or collapse a folder, double click on the red bullet or the name. The subentries appear or disappear. Multiple entries can be expanded at the same time.

The colors of the folders have the following meaning:

- **red bullet and black writing**
  the folder is collapsed
- **red bullet and red writing**
  the folder is expanded

The color codes belonging to the entries in these folders are explained in the respective sections below.

Fast view tree

In fast view tree the items are arranged in a navigation pane. Only the content of one bar can be shown at one time. Just hold the mouse for a short while on a bar or click on it and the formerly shown bar hides its entries and the entries of the newly selected bar show up. The title of the selected bar is written in red, the titles of the other bars are written in black.

The color codes belonging to the entries in these folders are explained in the respective sections below.

6.2.1 Modules

The **modules** folder or bar lists all HYDRA modules that are connected together to a wall. The way multiple HYDRAS are assigned to a wall is explained in section 5.3.4 Setup module. The following colors are used:

- **orange bullet and writing**
  this module is selected
- **blue bullet and black writing**
  this module is not selected
- **flashing red bullet and writing**
  this module has at the moment been selected

The name of the selected module is also displayed in the **state** bar at the 4th position.

Controlling the displayed content of a module

Clicking on one module in the list shows on the display area the currently displayed content of that module. This enables to update the content of the work area to this module 5.3.1 Updating work- and display area and allows controlling the display of the projection modules even if the operator can not directly see it.

Controlling the Hydra modules

The entries **Halt module**, **Reboot module**, **Reset module**, **Set module time**, **Module status**, **Setup module** of the **Module** menu affect always the HYDRA module that is currently selected.

6.2.2 Wall layouts

Clicking on a wall layout loads the selected wall layout on the projection modules. This can also be achieved by the command **Load wall layout**, see section 5.2.1 Wall Layout. The layout of the selected module can be seen on the display area.

6.2.3 Layouts

Within the **Layouts** folder all layouts are listed. Clicking on a layout shows this layout on the work area. This can also be achieved by the command **Load layout**, see section 5.4.1 Module layout.

Selecting a layout changes the color of the bullet from blue to orange and the color of the name from black to yellow. The name of the layout is also displayed in the state bar at the 5th position, see section 6.3.1 Statebar.

6.2.4 Objects

In the **Objects** list object templates with defined properties are stored. These object properties contain the type of the object, border settings, etc except size, position and source of the object. Clicking on an object template in this list assigns its properties to the active object in the work area.

6.2.5 Sources

The **Sources** folder contains all sources of that HYDRA module that is indicated in the statebar (6.3.1 Statebar). Clicking on a source assigns this source to the active object in the work area, if this object is a **video** object.

By default only the video sources of a HYDRA are listed. The number of audio sources that additionally shall be listed can be set in the **Setup module** dialog box, please refer to section 5.3.4 Setup module.

If a source is selected, its properties can be edited, by means of the **Setup source** dialog box, see section 5.3.7 Setup source.

The colors in the **Sources** folder have a higher variety of meanings than in other folders.

- **orange bullet**
  the source is available
- **blue bullet**
  the source is not available
- **black writing**
  the source is not selected
- **red writing**
  the source is used
- **orange writing**
  this source is used by the active object in the work area

Furthermore a letter in square brackets indicates the type of the source:

- **[A]**
  analog source, coming from the analog video input card
- **[S]**
  SDI source, coming from the SDI video input card
- **[H]**
  HD-SDI source, coming from the HD-SDI video input card
- **[R]**
  RGB source, coming from the RGB input card
- **[M]**
  streaming video, coming from the Streaming video card
- **[-]**
  source is not present

6.2.6 Scripts

Finally the **Scripts** folder lists the once generated scripts. Clicking on a script in the list opens the **Wall script** dialog box and starts the selected script. The window remains open; see the command **wall script** section 5.2.4 Wall script.

6.3 Statebar and messagebar

6.3.1 Statebar

The **statebar** provides information about the display area and the work area. It contains up to five items. The items are explained in the table below in the order they appear:

item	refers to	description
resolution	display area	resolution of the module that is currently selected, see active module
grid	work area	number of grid cells in x- and y-direction
number of objects	work area	number of objects that are currently on the work area
active module	display area	indicates which module is currently selected and displayed on the display area
layout	work area	indicates the layout that is loaded on the work area

Table 6-2
Items of the statebar

6.3.2 Messagebar

The **messagebar** informs about the current action on the user interface. If a dialog box is opened, it displays its title. As well it informs about mouse actions on the work area. While moving an object with the mouse it informs about the coordinates of the upper left corner and, if resizing it, also about the current width and height of the object.

Please see section 4.1.1 User interface, for an instruction what to do if the **messagebar** indicates that a dialog box is opened but it can not be seen on the display.

7 Error messages

The Hydra is able to detect errors related to video, RGB and audio sources and errors of hard- and software of the HYDRA itself.

7.1 Source related errors

Source related errors can be displayed in the wall alarms list, please see section 5.2.2 Wall alarms area. Detection is activated in the **Source properties** dialog on the **Alarms** tab; please refer to section 5.3.7 Setup source.

The properties of these errors are listed below.

7.1.1 Audio errors

The following errors related to audio sources may occur:

Audio Errors	
Audioloss **-60.0 – 20.0 dBu** **in steps of 0.1 dBu**	This error appears, if the level of the audio source is too low. The level for this error can be set by means of the **Setup source** dialog box on the **Alarm** tab.
Audiooverlevel **-60.0 – 20.0 dBu** **in steps of 0.1 dBu**	This error appears, if the level of the audio source is too high. The level for this error can be set by means of the **Setup source** dialog box on the **Alarm** tab.
Audioantiphase<0	Becomes active as soon as the phase between the channels in pair is negative.
Audioantiphase<45	Becomes active as soon as the phase between the channels in pair is more negative than 45°
Audioantiphase<90	Becomes active as soon as the phase between the channels in pair is more negative than 90°
Audiolock	There is no audio carrier

Table 7-1
Audio errors processed by HYDRA

7.1.2 Synchronization errors

The following error related to NTP synchronization may occur:

Synchronization error	**Description**
Ntpsynchrolost	Becomes active, if the NTP daemon is not synchronized or if it is not running.

Table 7-2
Synchronization errors processed by HYDRA

7.1.3 Video errors

The following errors related to analog, SDI or HD-SDI video sources may occur:

Video errors Value	Description
Videoblack **0 – 255 bit** **in steps of 1 bit**	The video data will be checked during 100 fields. If the luminance pixel data of each pixel of each field is lower than the **Videoblack** level, the error becomes active. Only pixels of the active area of a video are taken into consideration. The level for this error can be set by means of the **Setup source** dialog box on the **Alarm** tab.
Videowhite **0 – 255 bit** **in steps of 1 bit**	The video data will be checked during 100 fields. If the luminance pixel data of each pixel of each field is higher than the **Videowhite** level, the error becomes active. Only pixels of the active area of a video are taken into consideration. The level for this error can be set by means of the **Setup source** dialog box on the **Alarm** tab.
Videofreeze **0 – 255 bit** **in steps of 1 bit**	The summation of luminance pixel data over 10 fields will be compared with the summation of the next 10 fields. If the difference is smaller than the **Videofreeze** level over 100 fields a freeze is detected and the error becomes active. The level for this error must be set dependant of the noise of the video data. A freeze will be never detected if the level is too low and the source is noisy. Also if the level is too high, the freeze detection will always be active. The level for this error can be set by means of the **Setup source** dialog box on the **Alarm** tab.
SDI Decoder Errors	
Videoloss	The SDI input signals passes through a variable gain equalizing stage. The SDI input incorporates a signal strength indicator indicating both the presence of a carrier and the amount of equalization applied to the signal. If the equalization is too high (e.g. cable too long) or if there is no carrier (e.g. incoming amplitude too low), this error becomes active.
Videolock	A videolock error is detected if • there is no input data detected (no data transition over 1µs) • the incoming data signal and the PLL clock are not phase locked • the system is locked to a harmonic
VideoTRS	A time reference signal (TRS) error is detected if • the TRS is missing • the TRS is in the wrong location • the TRS is different from the one expected
Analog Decoder Errors	
Videoloss	This error appears if there is no sync detected within 31 consecutive line periods.
Videolock	Active when the PLL of the decoder is not locked: The HYDRA indicates a lock error when the incoming data signal and the PLL clock are not phase locked.
Videohorlock	This error appears if the horizontal sync is not found within about one clock cycle of the expected position for 32 consecutive lines. This indicates the stability of the incoming video. Consumer VCR's is an example of source that tends to set this error.
Videolumaoverflow	Luminance AD converter overflow detection.
Videochromaoverflow	Chrominance AD converter overflow detection.
Indicators for video related input	
closedcaption	Active, when a closed caption signal is provided with the video signal.
TT_loss	Active, when there is no teletext provided with the video signal.

Table 7-3
Video errors processed by HYDRA

7.2 Device related errors

Device related errors are shown in the module status list; please refer to section 5.3.3 Module status.

7.2.1 Hard- and software errors

Hardware or software errors of HYDRA and a first analysis for these errors are given in the table below:

Error message	Analysis
Slot[<nr>]: <boardnr> <filename> not found	A specific file to be loaded in an altera device on the specified board was not found: • Contact the Barco support
Slot[<nr>]: Altera load: <boardnr> <filename> not found	A specific file to be loaded in an altera device on the specified board was not found: • Contact the Barco support
Slot[<nr>]: Altera load: <boardnr> <filename> is empty	The specific file to be loaded in an altera device on the specified board is empty: • Contact the Barco support
Slot[<nr>]: Altera load: ConfDone does not answer	The altera device(s) of the board in the specified slot do not confirm that the configuration was successful: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: Altera load: Cannot load databytes	The software could not load data to the altera device(s) on the board in the specified slot: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: Altera load: Status does not answer	The altera device(s) of the board in the specified slot does not confirm its status to the software: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
am56InitAESBoard: TimeOut(<x>)	The software could not initialize the audio board in the specified time: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: Xilinx load: <slotnr> <filename> not found	The specific file to load into the Xilinx device on the audio board in the specified slot was not found: • Contact the Barco support
am56InitXilinx: TimeOut(<x>)	The software could not initialize the Xilinx device on the audio board in the specified time: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
am56InitDSP: TimeOut(<x>)	The software could not initialize the DSP on the audio board in the specified time: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: DSP load: <slotnr> <filename> not found	A specific file to be loaded in a DSP device on the audio board in the specified slot was not found: • Contact the Barco support
Slot[<nr>]: DSP load: <slotnr> <filename> is empty	The specific file to be loaded in the DSP on the audio board in the specified slot is empty: • Contact the Barco support

Corrupt gmZX1 configuration	The software did not configure the scaler on the analog or SDI video input card: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: Overlay input only allowed in first slot	The position of the overlay input card is fixed to slot0: • The position of the overlay input card must be changed to slot0. Please refer to the HYDRA user's manual and contact the Barco support.
Slot[<nr>]: Found already an Overlay input in an previous slot	There is only one overlay input card allowed in one HYDRA: • The overlay input card, which is not inserted in slot0, must be removed. Please refer to the HYDRA user's manual and contact the Barco support.
Slot[<nr>]: Altera load failed	The software did not manage to load the altera on the board in the specified slot: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: Hardware initialisation failed	The software did not manage to initialize the hardware on the board in the specified slot. • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: GAP between boards not allowed	The software did not detect a board in the slot **<slotnr – 1>**: • A board must be inserted in slot **<slotnr – 1>**. • If there is a board in the slot then retry **<reset module>**. If the error still occurs then the board that is not detected must be replaced; contact the Barco support.
Slot[<nr>]: No Overlay input found in a previous slot	There was no overlay input card in the slot **<slotnr – 1>**: • When there is no overlay input card an overlay input card must be inserted in slot0. • If there is an overlay input card: retry **<reset module>**. If the error still occurs then the overlay board must be replaced; contact the Barco support.
Source input not allowed after an output	The software detected one or more input cards in a slot after the output card: • The output card must always be inserted after the last input card
Slot[<nr>], Channel[<nr>]: Hardware initialisation failed	The software did not manage to initialize the hardware on the specified channel of the board in the specified slot: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: GAP between outputs not allowed	The software detected an empty slot between two outputs: • If there is an empty slot: an output card must be inserted in the empty slot; contact the Barco support. • If there is an output card in the specified slot: Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: Xilinx load failed	The software was not able to load the Xilinx device on the audio board in the specified slot: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.

Slot[<nr>]: DSP load failed	The software was not able to load the DSP on the audio board in the specified slot: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: Slot[<nr>]: Unknown board type <BoardType>	The software detected in the specified slot a board with the specified boardtype, that is not known by the software: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support. • Check if the iStudio CD-ROM is up-to-date
No overlay input found	The software detected no overlay input card: • If there is no overlay input card, a board must be insterted into slot0; contact the Barco support. • If there is an overlay input card, try **<reset module>**. If the error keeps occurring, the board must be replaced; contact the Barco support.
No source inputs found	The software detected no video or RGB input card: • If there are no video or RGB input cards, those cards must be inserted into the slots between the overlay input card and the output card; contact the Barco support. • If there are video or RGB input cards: Retry **<reset module>**. When the error keeps occurring, the boards must be replaced; contact the Barco support.
No Output found	The software detected no output board: • when there is no output board an output board must be inserted in the first slot after the last source input board; contact the Barco support. • if there is an output board: Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: (output) board lost	The software lost connection to the output board: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
ovly: <filename> not found	The software could not find the specified file to load to the overlay input card: • Contact the Barco support
ovly: Failed loading DVI Hotplug detect EEPROM	The software could not load the information into the EEPROM for automatic DDC-data detection on the overlay input card: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
ovly: Failed loading eMaintenance EEPROM	The software could not load the information into the EEPROM for eMaintenance on the overlay input card: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: Ovly Failed progamming key	Writing to SDRAMs on overlay input card had timed out: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.

Slot[<nr>] (overlay): Board lost!	The software lost connection to the overlay input card: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>], Channel[<nr>]: Board ↳ lost	The software lost the specified channel on the board in the specified slot: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.
Slot[<nr>]: I2c write failure	The software failed to configure a hardware device with the I2C command: • Retry **<reset module>**. When the error keeps occurring, the board must be replaced; contact the Barco support.

Table 7-4
Hardware and software errors processed by HYDRA

8 Advanced operation

This chapter is finally explaining how to access the data of a HYDRA, how to upgrade to a new release of iSTUDIO and is explaining some advanced configurations.

8.1 Data structure and data access

Initially the operating system of HYDRA and all other files are stored on the iSTUDIO – Hydra boot CD **R32875211**. When switching on the HYDRA for the first time a data structure to store varying files is copied from the CD-ROM to the flash disk. In this structure the configuration, log and system files will be stored and further bitmaps and applications can be added. The following directories are created:

`/home/hydra/flash/anim/`	contains animated bitmaps
`/home/hydra/flash/logo/`	contains images and logos (non-animated bitmaps)
`/home/hydra/flash/system/`	contains system-related files (e.g. startup, shutdown images)
`/home/hydra/flash/config/`	contains configuration files
`/home/hydra/flash/timing/`	contains timing files
`/home/hydra/flash/save/`	contains saved layouts, objects and scripts
`/home/hydra/flash/log/`	contains log files
`/home/hydra/flash/apps/`	contains user applications (e.g. custom clocks)
`/home/hydra/flash/snmp/`	contains SNMP related files
`/home/hydra/flash/language/`	contains the text files for the language versions of the GUI

You find information concerning the usage of animations, logos and applications in section 5.6.4 Edit object....

If you changed the content of the folders `logo` and `anim` a software reset is required to make the new content of these folders visible in the GUI, please refer to section 5.2.5 Wall Control!

8.1.1 Data access on Hydra

To connect to the HYDRA data structure three different applications can be used: The Windows Explorer, an FTP connection or a Telnet connection.

Users and passwords

Two accounts on the HYDRA are applicable to log in, the root account and a user account.

- user: **ofc** (limited access)
  password: **glad01**
- **root** (general access)
  password: **glad01**

Windows Explorer

On the HYDRA a Samba server is already installed. This allows easy data access to the HYDRA by simply mapping the HYDRA file system to the Windows Explorer. To map the HYDRA use its IP address in the form `\\<IP address>\flash` to connect. When prompted to indicate user name and password use the above mentioned login information.

FTP connection

Also an FTP connection to the HYDRA can be established. Login with **ofc** and password **glad01**, the `/home/hydra/flash/` directory should be accessible for adding and deleting of logos and animations or other files.

If you transfer files from a computer with windows operating system make sure to select binary transfer mode.

Telnet

Via telnet the HYDRA is only accessible for the user **ofc**. But once connected, the command **su** allows logging in as root. Again the directory `/home/hydra/flash/` is accessible.

8.1.2 Backup / restore procedures

The HYDRA operating system and file structure is specially developed to provide a stable system with long lifetime. The CD-ROM is read only and therefore the operating system can not be miss-configured. The varying files are written on a flash disk. The access to the files on the flash disk is explained in the HYDRA user's manual.

Backup procedure

It is recommended to make a backup copy of the flash disk as often as bigger changes to layout and configuration are made. With one of the three access methods described above this can be achieved very easily.

Restore procedures

If configuration data needs to be restored, data of the backup can be rewritten on the flash disk and the HYDRA is operable as of the state of the backup.

Don't restore configuration files that were saved while a previous iStudio release was running.

The configuration files are updated during the update from one release to a newer one. Therefore former backups are not necessarily compatible.

8.2 Upgrading

It is strongly recommended to make a backup of the system before upgrading, please refer to section 8.1.2 Backup / restore procedures. In case that an error occurs and restoring the backup fails, please contact the Barco support (10.1 Hotline).

To upgrade one or multiple HYDRA modules to the current release of the iSTUDIO software, there are two different procedures. The first procedure is less time consuming. It is explained on this page below. The second procedure requires more time, but can be used, if it is not acceptable that the whole wall is down for a short while.

Upgrading all Hydra modules at once

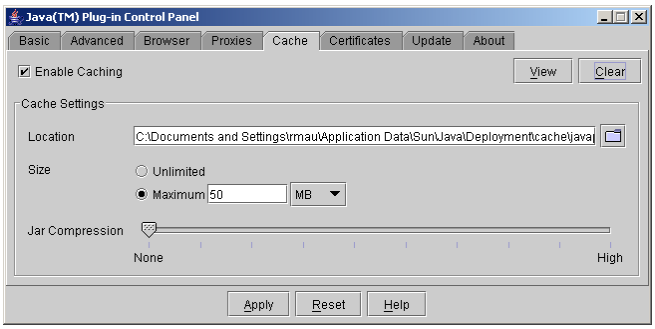
- Halt all HYDRA modules; please refer to section 5.2.5 Wall Control.
- When the HYDRA modules stops sending an output signal open the CD-ROM drive, as explained in the HYDRA user's manual, take out the old iSTUDIO CD and insert the current one.

Please be careful when inserting the CD, the CD-ROM drive closes automatically after a while!

From iStudio release 1.9 on, changes in the communication protocol make it necessary that no old parts of the GUI are any longer stored in the Java cache of the operator PC before starting the new version. Otherwise the password will be misinterpreted and access to the Hydra will not be possible!

Therefore follow the additional steps:

- Close all open browser windows
- Open: **Start** -> **Settings** -> **Control Panel** -> **Java Plug-in** -> **Cache** tab
- Click first the **Clear** button and then disable the **Enable Caching** checkbox. Click **Apply**!



- Close the drive and start the HYDRA modules as explained in section 3.2 Switching on and off.
- On the operator PC reset the Java Cache settings so that **Enable Caching** is selected.
- Check with subsection Additional actions after upgrading below.

Upgrading one Hydra after the other

If you do not want to switch off the whole wall at once, but just one HYDRA after the other, then a more particular procedure is required. In this case temporarily a new wall name has to be introduced for the HYDRA wall. Please follow the steps below:

- Connect to one HYDRA
- Make sure, that on the **Startup** tab of the **Module properties** dialog **Show active layout on shutdown** is selected, please refer to section 5.3.4 Setup module
- Change the wall name of the HYDRA in the same dialog on the **General** tab towards the new name and click **OK**.
- Halt that HYDRA; please refer to section 5.3.2 Module control.
- When the HYDRA stops sending an output signal open the CD-ROM drive, as explained in the HYDRA user's manual, take out the old iSTUDIO CD and insert the current one.

Please be careful when inserting the CD, the CD-ROM drive closes automatically after a while!

- Close the drive. Switch the power switch of the HYDRA off and on again. It will startup and continue to show the last displayed layout.

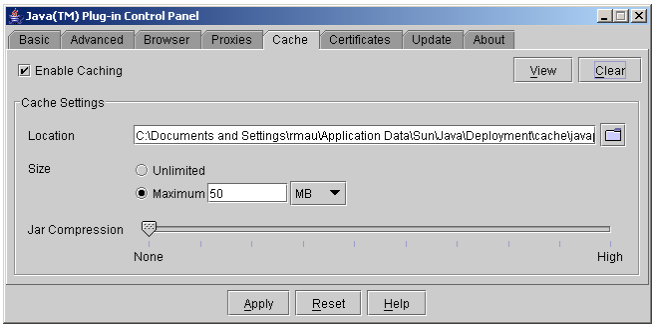
Do not connect to this Hydra at that moment. First proceed with the instruction below!

- Proceed with every HYDRA, one after the other as explained for the first HYDRA.

From iStudio release 1.9 on, changes in the communication protocol make it necessary that no old parts of the GUI are any longer stored in the Java cache of the operator PC before starting the new version. Otherwise the password will be misinterpreted and access to the Hydra will not be possible!

Therefore follow the additional steps:

- Close all open browser windows
- Open: **Start** -> **Settings** -> **Control Panel** -> **Java Plug-in** -> **Cache** tab
- Click first the **Clear** button and then disable the **Enable Caching** checkbox. Click **Apply**!



- After clearing the cache, connect to the HYDRA modules. Now the wall name of each HYDRA module can be changed back to the original name.
- On the operator PC reset the Java Cache settings so that **Enable Caching** is selected.
- Check with subsection Additional actions after upgrading below.

Additional actions after upgrading

When upgrading, the BIOS settings have to be considered. If till then the HYDRA has provided output in XGA resolution, the BIOS settings might have to be changed to SXGA resolution, please refer to section **BIOS Setup** in the HYDRA user's manual.

Upgrading to release 1.6 or higher might lead to a change or loss of the source settings. To restore the default source settings just click the default button in the source settings dialog!

Upgrading from release 1.8.2 to release 1.9 or higher requires that the module timing is restored manually.

After the upgrade the timings list on the **Screen** tab, see section 5.3.4 Setup module, is initially empty. Therefore do the following:

- Establish a telnet connection to the module, see section 8.1.1 Data access on Hydra.
- Enter:
  `cp /mnt/cdrom/home/hydra/default/timing/timing.cfg /flash/timing/`
- Enter **`y`** to overwrite the existing `timing.cfg` file
- Enter **`reboot`** to reboot the module
- With the iSTUDIO GUI select the appropriate timing.

8.3 Redundant operation

If operating two or more HYDRAS, special hard- and software configurations can be made to avoid a loss of source control in case that one display fails. Therefore a special hardware configuration is required, which allows to insert the output of each HYDRA to the overlay input card of the other HYDRA, where it can be used as background. Please refer to the HYDRA user's manual for the explicit hardware configuration.

Within normal operation the output of the HYDRAS is displayed quite normally directly on the projection modules and each HYDRA can display a layout that covers the whole display area. The input on the overlay cards is not used. In case of a fail of a projection module, on both HYDRAS it must be switched to specially prepared layouts. These layouts must consider the area used by the other layout, so that the whole display area is only used, if combining them. This enables to display the sources of both HYDRAS on one display even if the area per source is of course less than before. The figure below shows two redundant layouts that can be combined without loss of information:

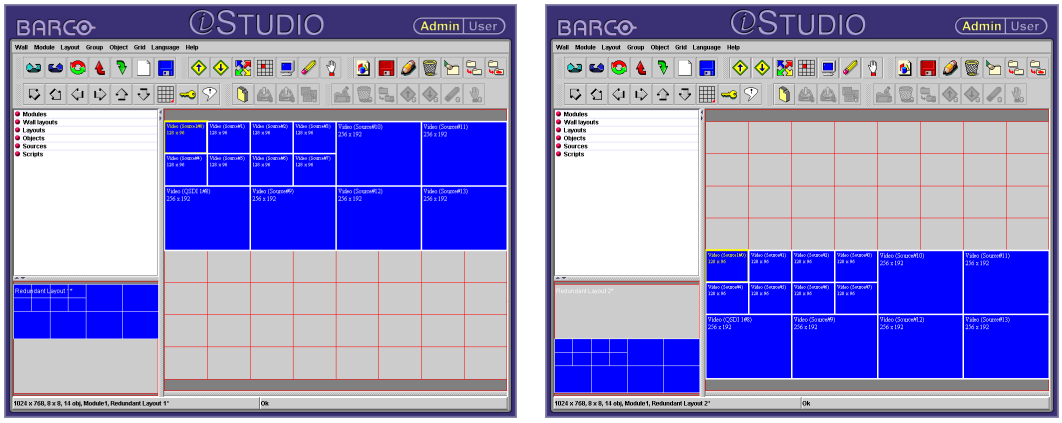


Figure 8-1
Two associated layouts for redundant operation

The layouts require furthermore that **Enabled internal overlay** in the **Layout properties** dialog box is checked, see section 5.4.2 Setup layout please. This enables, that the output of one HYDRA is used a background for the other HYDRA. Hereby both layouts and their sources can be displayed on the remaining display. Nevertheless any changes to the layouts and source administration must be done on the HYDRA, where the sources are connected.

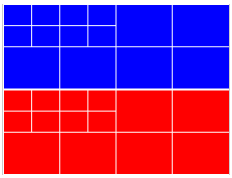


Figure 8-2
Overlaying layouts

8.4 Dual mode

Usually one HYDRA is connected to one projection module. Under certain circumstances it can also be useful to connect one HYDRA to two projection modules who share the display information. This is called **dual mode**. It can be used if:

- digital projection devices with XGA resolution are used, please refer to section 5.3.4 Setup module
- not more than 28 video or RGB sources shall be displayed together on both projection modules

The setting dual mode causes the work area and display area to represent the size of 1024×384 pixels, which is two times 512×384 pixels. This is the amount of pixels, which is internally processed for each of the projection modules. In the overlay card an upscaling for each projection module to 1024×768 pixels takes place for graphical background data. Video input data is scaled as in normal mode.

If from the **resolution** list of the **Module properties** dialog box a setting supporting dual mode is selected (please refer to section 5.3.4 Setup module), the display area and work area gets an aspect ratio of 8 × 3 which is 2 times 4 × 3. Take care, that **Maintain aspect ratio** from the **Grid** menu is checked to recognize how the work and display area changes in dual mode, please refer to section 5.7.4 Maintain aspect ratio.

It is not possible to display a video module overlapping! A video object must completely be displayed on one of both projection modules.

The figure below shows a typical layout for dual mode:

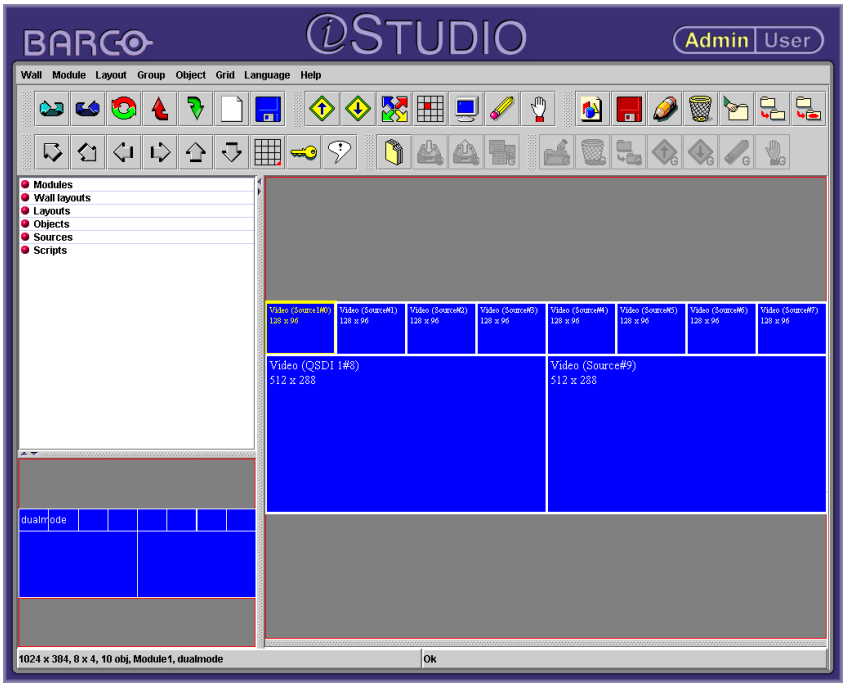


Figure 8-3
Work and display area in dual mode

Please refer to the HYDRA user's manual for the hardware configuration of dual mode.

Dual mode with Quad-SDI input card, Quad analog input card and Streaming video card

When displaying the sources of one Quad-SDI input card, Quad analog input card or Streaming video card in dual mode on different projection modules, some restrictions must be considered.

The four sources of the card are internally combined to two couples. The sources of channel **A** and channel **B** are one couple and the sources of channel **C** and channel **D** are the other couple, please refer to the HYDRA user's manual to identify the channels. When displaying such a couple on both modules – each channel on another module – one channel will not be displayed correctly, when located on the same area on the respective modules. Within the overlapping area the content of the video with the higher stacking order will be visible, please refer to section 5.6.6 Stacking order of an object.

In the figure below **video 1** has a higher stacking order, which means it is more on the top than **video 2**. Therefore in the overlapping area the upper left corner of **video 2** shows the lower right corner of **video 1**. Changing the stacking order would show **video 2** completely, but **video 1** would show a part of **video 2** in its lower right corner.

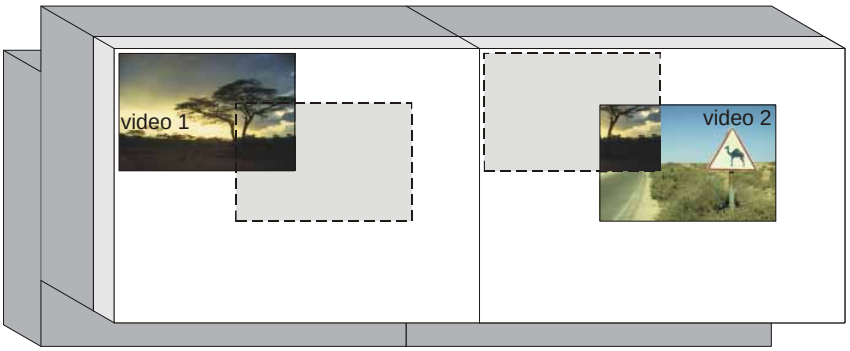


Figure 8-4
Displaying windows of a couple on overlapping areas

8.5 Server port configuration

The iSTUDIO software default configuration uses by default six defined ports. In combination with some firewalls which block these port numbers, it might be necessary to change the port numbers.

Changing port numbers

The file `/etc/services` stores the port configuration. The iSTUDIO default configuration uses the port numbers `6666`, `6767`, `7777`, `9000`, `8882` and `8883`. To edit the file, please refer to section 8.1.1 Data access on Hydra. The relevant entries begin all with `bcdhydra`.

```
# Local services

bcdhydra        6666/tcp                        #internal protocol server
bcdhydra        6767/api                        #api server
bcdhydra        7777/udp                        #broadcast
bcdhydra        9000/xml1                       #xml server
bcdhydra        8882/xml2                       #xml server
bcdhydra        8883/xml3                       #xml server
```

In a system with multiple Hydra modules it is important that each Hydra has the identical port configuration to maintain good system speed.

9 Technical appendix

This chapter provides tabular overview about the order codes of components used with iStudio.

9.1 Order codes

Documentation	
R5976569	user's manual iSTUDIO, English
R5976260	user's manual HYDRA, English
R5976568	user's manual HYDRA COMPACT, English
R5976593	CD-ROM iSTUDIO Documentation & Supplement
Software/Licenses	
R32875211	spare software medium iSTUDIO – HYDRA boot CD

Table 9-1
Order codes

10 Troubleshooting

Check this chapter for information how to contact the technical support of Barco.

10.1 Hotline

Feel free to contact us if you have any further questions!

- **Barco N.V. Projection Systems Belgium**
  Noordlaan 5, B-8520 Kuurne
  Phone: +32-56-368-282, Fax: +32-56-368-251
  E-mail: support.controlrooms@barco.com, Web: www.barcocontrolrooms.com

11 Appendix A - Hydra Open Protocol

The functionality provided by iSTUDIO can mostly also be accessed by means of the HYDRA open protocol or the scripting language. The XML open protocol provides a lot of the functionality of the HYDRA scripting language in a powerful and user-friendly way and will be extended and supported further on.

This chapter provides a reference to the open protocol.

11.1 Formatting

11.1.1 XML

All formatting in the HYDRA Open Protocol is based on XML, which stands for Extensible Markup Language. This gives a uniform and readable look to all the data that is transferred to and received from the HYDRA and is also easily extensible.

A simple example of an XML structure is the following:

```
<XML>
 <TAG>
 </TAG>
</XML>
```

The whitespace is not necessary, neither are the newlines (\n). So the following structure is exactly the same:

```
<XML><TAG></TAG></XML>
```

And so is this structure:

```
<XML>
<TAG></TAG>
</XML>
```

XML and TAG are called tags. A tag starts with <tagname> and ends with </tagname>. Tagnames are composed with numbers and capital letters. Inside a tag is its content, which can be for instance other tags or strings or numbers. A tag can also have attributes, like in the following example:

```
<TAG ATTR1="value1" ATTR2="value2"></TAG>
```

ATTR1 and ATTR2 are the names of the attributes, and value1 and value2 are the values. Attribute names are composed with numbers and capital letters. Values are placed between double quotes (").Values can be anything. Because double quotes are already used as delimiters, you need another way to use double quotes in values. The combination **"** or **"** stands for a double quote. 34 is the decimal value of the ASCII code for the double quote.

Because **&** is used to specify any ASCII character, you must replace it with the combination **&** or **&** if you want to use it inside the value. For instance the value "A&B" may look like this:

```
<TAG ATTR="&#34;A&#38;B&#34;"></TAG>
```

The contents of a tag can be anything, but certain characters with special meaning need to be replaced with the following combinations either in numeric character reference or in character entity reference:

Character	numeric character reference in unicode notation	character entity reference
" (double quotes)	"	"
< (left angle bracket)	<	<
> (right angle bracket)	>	>
& (ampersand)	&	&
(new line)

The Hydra open protocol deviates from the XML standard in these ways:

- Self-closing tags are not allowed
- Unquoted values are allowed, but are returned capitalized
- Tags are not case sensitive, but are returned capitalized
- XML comments are not allowed

Some examples:

```
<TAG1>&#60;test&#62;</TAG1>
<TAG2>12345</TAG2>
<TAG3 NAME="tag3">A&#38;B</TAG3>
<TAG4><A></A><B></B></TAG4>
```

The content of TAG1 is <test>, of TAG2 is 12345 and of TAG3 is A&B. TAG4 contains the tags A and B. To conclude this brief XML description, here is a final example:

```
<XML>
 <MESSAGE TO="hydra" FROM="me">
      <TITLE>Open Protocol Example</TITLE>
      <BODY STYLE="plain">&#34;Test&#34;</BODY>
      <TIME>15:05:30</TIME>
      <DATE>19/06/2001</DATE>
 </MESSAGE>
 <TEST><TEST2><TEST3>abcde</TEST3><TEST2></TEST>
</XML>
```

11.1.2 Packets

A packet is the structure used to exchange information with the HYDRA. All packets have the following basic structure:

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
...
</PACKET>
</XML>
```

Between the XML tags, there is a PACKET tag with two attributes: MODULE contains the destination of the packet (HYDRA) and VERSION the version of the packet (describing the meaning of the contents). A major revision of the protocol may define packets with version 2.0 or higher, while a minor revision may have packets with version 1.1. Of course version 1.0 packets will still be supported, unless it is specified they are not. Everything described in this document relates to version 1.0, unless stated otherwise.

The response for each packet will also have this structure. If a wrong formatted **XML** packet is sent to the HYDRA, you will receive an error message, please see below.

11.1.3 Error notification

Unknown commands and syntax errors are reported by the XML parser and you will receive a notification.

Syntax errors

If the parser detects a syntax error it will send an ERROR message instead of the packet containing the COMMANDRESULT.

The message may just contain the line where the syntax error was detected:

```
<XML>
<ERROR LINE="6"></ERROR>
</XML>
```

For some syntax errors the error tag contains additional information about the sign causing the error.

```
<XML>
<ERROR LINE="5">" Unexpected GT character "</ERROR>
</XML>
```

The table below lists these messages:

Identifier	Sign causing a syntax error:
GT	**>**
LT	**<**
EQUAL	**=**

Wrong command name

If a command name is misspelled the COMMANDRESULT tag shows an error notification containing the unknown command name.

Send	`<COMMAND ID="NOCOMMAND" SERIAL="example">` `</COMMAND>`
Receive	`<COMMANDRESULT SERIAL="example" ERROR="1" ERRORMSG="Unknown command : NOCOMMAND">` `</COMMANDRESULT>`

11.2 Connections

There are two connection types available: one for transactions and one for event handling.

11.2.1 Transactions

The following procedure describes how to get a connection for transactions:

- Create a TCP socket with the IP address of the HYDRA module and with port **8881**
- Open the socket
- Send your transaction as XML formatted text
- Receive the result of this transaction as XML formatted text
- Repeat this procedure as many times as necessary, keeping the connection open
- Send **closeconnection** packet to server when done and close the socket

11.2.2 Events

The following procedure describes how to get a connection for events:

- Create a TCP socket with the IP address of the HYDRA module and with port **8882**
- Open the socket
- Enable or disable desired events (send XML formatted text)
- Receive events as XML formatted text
- Keep connection open until you are done
- Send **closeconnection** packet to server when done and close the socket

11.2.3 Closing a connection

To close a connection, send the following packet, optionally wait for the result and close the socket.

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<CLOSECONNECTION>
</CLOSECONNECTION>
</PACKET>
</XML>
```

The HYDRA answers with:

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<CLOSECONNECTIONRESULT>
</CLOSECONNECTIONRESULT>
</PACKET>
</XML>
```

Sending an XML command does not give any feedback, which means you are not notified, if you sent a command that the parser could not process. Anyhow, the result of the **set**-commands can be checked by asking the respective properties with the corresponding **get**-command.

11.3 Transactions

11.3.1 Definition

Transaction

A transaction contains a number of commands to be executed by the HYDRA. Transactions are always completely executed before another transaction is processed. All the commands in a transaction are executed sequentially. A transaction sits inside a PACKET tag and has the following tag:

```
<TRANSACTION SERIAL="serial" MODE="mode">
...
</TRANSACTION>
```

`serial` is a unique string (e.g. a number) to identify each transaction (necessary for the answer from the server). `mode` determines how this transaction has to be executed:

- **0**: complete all commands in transaction (even when some commands fail)
- **1**: when a command fails, stop the transaction and thus the execution of the remaining commands
- **2**: when a command fails, stop the transaction and do a full rollback (this mode might be fully supported later on but works the same like mode 1 currently)

The result of a transaction is always sent with the following tag:

```
<TRANSACTIONRESULT SERIAL="serial" ERROR="error">
...
</TRANSACTIONRESULT>
```

Within this structure the results for each individual command are stored in the same order as they were put in the TRANSACTION tag. `error` shows the number of commands that have failed (`0` means no failures).

Command

Each command sits inside a TRANSACTION tag and is created with the following tag:

```
<COMMAND ID="name" SERIAL="serial">
...
</COMMAND>
```

The `ID` is the name of the command and the `serial` is the unique serial (e.g. a number) to identify each command in a transaction result.

The result of a command sits inside a TRANSACTIONRESULT tag and is created with the following tag:

```
<COMMANDRESULT SERIAL="serial" ERROR="error">
...
</COMMANDRESULT>
```

The error is 0 when the command was successful and not zero if an error occurred. The meaning of this number depends on the command. Most commands return `1` if an error occurred and the execution of the command has failed.

11.3.2 Commands – OverView

All available commands of the open XML protocol are listed in the table below in alphabetic order together with a short description and link to the section containing the related syntax:

Command	Description	
addstream	11.3.7 Source related commands,	define a video stream with its parameters
adjustborder	11.3.9 Object related commands,	adjust border color of an object of the active layout
adjuststopwatch	11.3.9 Object related commands,	adjust stopwatch object parameters of active layout
adjusttally	11.3.10 Tally related commands,	adjust state or color of a software tally
adjusttext	11.3.9 Object related commands,	adjust text lines of a text object of the active layout
adjustumd	11.3.9 Object related commands,	adjust UMD captions of object of the active layout
adjustumdbackgroundonsource	11.3.7 Source related commands,	adjust UMD background color depending for a source
adjustumdonsource	11.3.7 Source related commands,	adjust UMD captions for a source
adjustvariable	11.3.9 Object related commands,	adjust caption, foreground color and background color of a text variable
clearsourcealarm	11.3.7 Source related commands,	clear an alarm of a source
clearlogfile	11.3.6 Module related commands,	clear the log file on a module
deletefile	11.3.3 File related commands,	delete a stored file
deletestream	11.3.7 Source related commands,	delete the definition of a video stream
getalarmconfig	11.3.7 Source related commands,	get the alarm configuration of a source
getalarms	11.3.8 Alarm related commands,	get a list with the configuration of all alarms
getlayout	11.3.6 Module related commands,	get the active layout of a module
getlistalarms	11.3.8 Alarm related commands,	get a list with all the supported alarms
getlistanims	11.3.5 Wall related commands,	get list with all available animation files
getlistfiles	11.3.3 File related commands,	get list with all available stored files
getlistlogos	11.3.5 Wall related commands,	get list with all available logo files
getlogfile	11.3.6 Module related commands,	get log file of a module
getmodule	11.3.6 Module related commands,	get the name of the connected module
getmodulestate	11.3.7 Source related commands,	get the state of all sources of a module
getmoduletime	11.3.6 Module related commands,	get time of a module
getsetupcolors	11.3.5 Wall related commands,	get the definition of the colors
getsetupmodule	11.3.6 Module related commands,	get the setup of a module
getsetupsource	11.3.7 Source related commands,	get the setup of all sources of a module
getsetupusermode	11.3.5 Wall related commands,	get the user mode setup
getsourcealarm	11.3.7 Source related commands,	get alarms for a source of a module
getsourcefreeze	11.3.7 Source related commands,	get the freeze-state of a source
getsourcename	11.3.7 Source related commands,	get the name of a source
getsourcestate	11.3.7 Source related commands,	get the current state of all sources of a module
getsourcetally	11.3.7 Source related commands,	get the tally state of a source
gettimings	11.3.5 Wall related commands,	get all supported timings with their configuration
getversion	11.3.5 Wall related commands,	get versions of iStudio software and Open Protocol
getwall	11.3.5 Wall related commands,	get the wall configuration

haltmodule	11.3.6 Module related commands,	halt a module
haltwall	11.3.5 Wall related commands,	halt all modules of the wall
initstreams	11.3.7 Source related commands,	initializes a video stream in a module
loadfile	11.3.3 File related commands,	get a stored file
loadlayoutandupdate	11.3.6 Module related commands,	show a stored layout on one module
loadwalllayoutandupdate	11.3.5 Wall related commands,	show a stored wall layout on the wall
rebootmodule	11.3.6 Module related commands,	reboot a module
rebootwall	11.3.5 Wall related commands,	reboot all modules of the wall
resetmodule	11.3.6 Module related commands,	reset a module
resetwall	11.3.5 Wall related commands,	reset all modules of the wall
savefile	11.3.3 File related commands,	store a file
setalarmconfig	11.3.7 Source related commands,	set the alarm configuration of a source
setmoduletime	11.3.6 Module related commands,	set the time of a module
setsetupcolors	11.3.5 Wall related commands,	set the definition of the colors
setsetupmodule	11.3.6 Module related commands,	set the setup of a module
setsetupsource	11.3.7 Source related commands,	set the setup of all sources of a module
setsetupusermode	11.3.5 Wall related commands,	set the user mode setup of the wall
setsourcefreeze	11.3.7 Source related commands,	freeze or unfreeze a source
setsourcename	11.3.7 Source related commands,	set the name for a source
setsourcetally	11.3.7 Source related commands,	set the tally state for a source
setsourcetallyonobject	11.3.10 Tally related commands,	set tally state of hardware tallies of video objects
setstream	11.3.7 Source related commands,	assign a stream of a module to a source
setwalltime	11.3.5 Wall related commands,	set time of all modules of the wall
softwareresetmodule	11.3.6 Module related commands,	reset the software of a module
softwareresetwall	11.3.5 Wall related commands,	reset the software of all modules of the wall
updatelayout	11.3.6 Module related commands,	transfer a layout to a module and display it

Table 11-1
Overview of commands

11.3.3 File related commands

This section lists all commands which can be used to manage configuration files of the HYDRA wall, i.e. information about wall layouts, layouts, objects, stream setup and encoder setup. All these files are stored in the save folder, please refer also to section 8.1 Data structure and data access. Information about names and structure of the files can be found in the next section, 11.3.4 File content.

Get list files

Get a list with all available stored files.

Send	`<COMMAND ID="getlistfiles" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<FILE ID="4x4" TYPE="layout">4x4_layout</FILE>`
	`<FILE ID="clock" TYPE="object">clock_object</FILE>`
	`...`
	`</COMMANDRESULT>`
	The full filename is inside the file tag.

See also	deletefile, loadfile, savefile

Load file

Get the content of the specified file from the HYDRA.

Send	`<COMMAND ID="loadfile" SERIAL="example">`
	`<FILE ID="4x4" TYPE="layout"></FILE>`
	`</COMMAND>`
	For each file specify: name and type, type is optional

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<FILE ID="4x4" TYPE="layout">`
	`<LINE>...</LINE>`
	`...`
	`</FILE>`
	`</COMMANDRESULT>`
	Between the line tags are the lines of the file.

See also	deletefile, getlistfiles, savefile

Save file

Store a file on the HYDRA wall.

Note: This command stores the file without any notice, even though a file with this name might already exist. Therefore carefully check in advance not to overwrite information you still need.

Send	`<COMMAND ID="savefile" SERIAL="example">`
	`<FILE ID="timer" TYPE="object">`
	`<LINE>...</LINE>`
	`...`
	`</FILE>`
	`</COMMAND>`
	For each file specify: name and type, type is optional. Between the line tags are the lines of the file.

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	deletefile, getlistfiles, loadfile

Delete file

Delete a stored file on all modules of the HYDRA wall.

Note: Renaming a file can be done by loading it, saving it to the new name and deleting the old file.

Send	`<COMMAND ID="deletefile" SERIAL="example">`
	`<FILE ID="4x4" TYPE="layout"></FILE>`
	`<FILE ID="clock" TYPE="object"></FILE>`
	`<FILE ID="test_layout"></FILE>`
	`</COMMAND>`
	For each file specify: name and type, type is optional

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	getlistfiles, loadfile, savefile

11.3.4 File content

This section explains structure and content of the layout files, the wall layout files, the stream configuration file and the encoder configuration file.

Do not change files of other type than the once mentioned above! By doing so, you might mis-configure the system which might prevent the Hydra from booting.

Syntax

- **File location**:
  The files are stored in `/home/hydra/flash/save/`. The following sections refer to the file types:
- **File names**:
  The stream configuration file and the encoder configuration file have predefined names. Layout and wall layout files have user defined names with a definite extension. Layout files end with `_layout`, wall layout files end with `_wall`. The first part of the name is the name that is also used with the iSTUDIO GUI. Additional underscores might be used in this first part of the name, e.g. `4x4_video_layout` is the layout file with the layout `4x4_video`.
- **File structure**:
  The content of a file begins with `_begin_` and ends with `_end_`, between these two lines there are multiple blocks which might be of different type. A block begins with `begin` and ends with `end`. The second line in a block lists the block type. The block type has an initial upper case letter. After the block type, follow the entries with the assigned values: `entry = value`. The name of an entry is completely written in lower case.
  The table below gives an overview about type, name and structure of the different files:

type	file name	structure
Layout	`name_layout`	one **General** block, multiple different **Object** blocks
Wall layout	`name_wall`	multiple **Module** blocks
Stream configuration	`streams_config`	multiple **Stream** blocks
Encoder configuration	`encoders_config`	multiple **Encoder** blocks

- **Font names**:
  When specifying TrueType fonts in the files, start with `tt-` add the font name and then add the pixel size –xx. E.g. for mingliu1 with font size 24 the following is used: `tt-mingliu1-24`. The available TrueType fonts can be found under the path `/home/hydra/fonts`.

Layout

A layout file contains general information about the setup of the layout and information about the objects, their position and configuration. A layout file contains one **General** block and an enumeration of different object blocks.

Layout – General

The first entries define what is displayed on the module; the last entries define the look of the work area of the iStudio GUI. (More information: 5.4.2 Setup layout, 5.7 Grid)

entry	value	meaning
General		the type of the block: general settings of the layout
resx		output resolution in x-direction
resy		output resolution in y-direction
backcolor	color name from `rgb.cfg` file	the background color
bitmap	`true | false`	use a bitmap as background
bitmapstyle	`center | tile | scale`	position of the image
bitmapname		the bitmap file names (from `/home/hydra/flash/logo`) to be used (if there is one)
overlay	`true | false`	use overlay signal
Info for the iStudio user interface:		
gridx		number of grid columns
gridy		number of grid lines
grid4by3	`true | false`	grid aspect ration 4:3
grid16by9	`true | false`	grid aspect ration 16:9
gridusey	`true | false`	fit grid vertically
gridalign	`0` = top or left `1` = center `2` = bottom or right	alignment of the grid

Layout – Object specific properties

Each object type has its own parameters. In the following the parameters for the types Object, Video, Audio, Logo, Clock, Timer, Viewer, Application, Text, Stopwatch, Alarm, UMD and Tally are listed. The object type Object has a special meaning. Its parameters are also parameters of the other object types. Anyhow in this document they are only listed in the Object section below. (More information: 5.6.4 Edit object...)

Object

entry	value	meaning
Object		the type of the block: an object of type Object (the below parameters are also part of the blocks Logo, Clock, Timer, Viewer, Application, Text, Stopwatch, Alarm, UMD, Tally)
name		object name
left	a value between `0` and `resx`	location of top-left corner in x-direction
top	a value between `0` and `resy`	location of top-left corner in y-direction
width	a value between `32` and (`resx - left`)	width of the object in pixels
height	a value between `32` and (`resy - top`)	height of the object in pixels
aspect	`none | 4/3 | 4/3 + | 16/9 | 16/9 +`	aspect ratio
transparent	`true | false`	transparency over video
visible	`true | false`	object is not visible on the module
borderon	`true | false`	border is visible with the below mentioned settings
borderseparator	a value between `0` and `30`	invisible border width around the visible border
borderwidth	a value between `1` and `20`	visible border width
bordercolor	color name from `rgb.cfg` file	the color of the border
borderstyle	`plain | 3D`	the style of the border
parent	`none` or the name of an existing object in this layout	the name of the parent object
position	`top left, top right, top center, left center, center, right center`	The position of the parent object, where position measures of the child refer to.
displacex		x offset with respect to the position selected in parent object in pixels
displacey		y offset with respect to the position selected in parent object in pixels
locksize	`true | false`	Lock the object size in the UI
lockxmul	`1` | other value	Information about the relative size with respect to the parent object used to display the object in the GUI. `1` is used if parent is `none`
lockxdiv	`1` | other value	see lockxmul
lockymul	`1` | other value	see lockxmul
lockydiv	`1` | other value	see lockxmul
umdon	`true | false`	switch the UMD's on /off
umdusetext	`true | false`	use the text line specified in the GUI
umdusetext2	`true | false`	use the text line specified in the GUI
umdtext	Text line	the first text line
umdtext2	Text line	the second text line
umdfont		the font to draw this line in

umdposition	`Bottom left | bottom center | bottom right | top left | top center | top right`	placement of the UMD
umdinside	`true | false`	the UMD is displayed in the video (only with video objects)
umdsplitted	`true | false`	Splits the two UMD lines: true: first under and second above the video false: both UMD's under the video
umdseparator	`true | false`	draw a filled rectangle between the two UMD's
umdsepcolor	color name from `rgb.cfg` file	the separator color
umdforecolor	color name from `rgb.cfg` file	the UMD text color
umdbackcolor	color name from `rgb.cfg` file	the background color

Video

entry	value	meaning
source	`0 | 1 | 2 | …`	the source number
translevel	`0 | 50 | 100`	the transparency level
scramble	`true | false`	turn scrambling on/off
scramblelevel	`0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100`	the level of scrambling
tallyon	`true | false`	use tallies
tallyshow	`true | false`	switch the visibility of the tallies on /off
tallystyle	`red – green | green – red | red – red | green - green`	style of the tally, color combination
tallyshape	`Square | Round | Fill`	The shape of the tallies might be square or round or the background color may be filled in.
tallypos	`UMD | border | UMD – border`	position of the tallies
tallydisabled	`Default | UMD color | border color | user color`	The color of a disabled tally
tallydisabledcolor	color name from `rgb.cfg` file	When tallydisabled is set to user color, then this color is chosen when the tally is disabled.
audioon	`true | false`	show audio bars
audioscale	`BBC PPM | DIN | Nordic | VU | Ext VU | AES/EBU`	the scale mode of the audio bars
audioplain	`true | false`	show plain audiobars (without scales)
barwidth	a value between `2` and `29`	width of the audio bars in pixels
erroron	`true | false`	show errors by blinking the border
errorcolor	color name from `rgb.cfg` file	The blinking color of the border in case of an error.
clearcolor	color name from `rgb.cfg` file	The blinking color of the border, if an alarm is solved but not yet cleared.
errorname	`true | false`	show the errorname in the object
xdson	`true | false`	Use XDS to get the program name and rating
ccon	`true | false`	switch on closed caption
ccvisible	`true | false`	show closed captions on screen
ccchannel	`CC1 | CC2 | CC3 | CC4 | T1 | T2 | T3 | T4`	channel of closed captions
ccusetruetype	`true | false`	use a truetype font to display closed captions
cctruetypefont-name		the name of the truetype font (if ccusetruetype is true)

tton	`true | false`	switch teletext decoding on
ttvisible	`true | false`	show teletext characters on screen
ttpage	a number from `100` to `899`	the subtitle page
ttusetruetype	`true | false`	use a truetype font to display teletext
tttruetypefont-name		the name of the truetype font (if ttusetruetype is true)
vitcvisible	`true | false`	should the VITC counter be visible or not
wsson	`true | false`	switch wide screen signaling on/off
wssindicator	`true | false`	show/hide the WSS indicator
wssmode	`none | WSS | WSS/AFD | VLI/AFD | ETSI`	the WSS mode
wsscolor	color name from `rgb.cfg` file	background color behind the video when WSS is used
wssdefault	`none | 4/3 | 16/9`	default aspect ratio when no WSS is found
wssarc	`true | false`	let the video size follow the WSS signal
afdon	`true | false`	switch AFD on or off
afdlines	`true | false`	show/hide the AFD lines
afdindicator	`true | false`	show the AFD indicator
afdshowerror	`true | false`	show deviation from standard
etsion	`true | false`	switch ETSI on or off
etsilines	`true | false`	show/hide ETSI lines
etsiindicator	`true | false`	show/hide ETSI indicator
audiodirection	`V | H`	direction of audiobars horizontal or vertical

Audio

entry	value	meaning
audiosource	`0 | 1 | 2 | …`	the source number
backcolor	color name from `rgb.cfg` file	the background color
barwidth	a number between `2` and `30`	the pixelwidth of the audiobars
audioscale	`BBC PPM | DIN | Nordic | VU | Ext VU | AES/EBU`	the scale mode of the audio bars
audioplain	`true | false`	show plain audiobars (without scales)
audiodirection	`V | H`	direction of audiobars vertical or horizontal
erroron	`true | false`	show errors by blinking the border
errorcolor	color name from `rgb.cfg` file	The blinking color of the border in case of an error.
clearcolor	color name from `rgb.cfg` file	The blinking color of the border, if an alarm is solved but not yet cleared.
errorname	`true | false`	show the errorname in the object

Clock

entry	value	meaning
digital	`true | false`	digital clock or not
morph	`true | false`	morphing clock or not, if digital is true
twelve	`true | false`	12 hours or 24 hours, if digital is true
offseth	a value between `-12` to `12`	the offset in hours
timezoneenabled	`true | false`	a distinct timezone is used

timezone		the timezone to be used, if timezoneenabled is true; specify an expression for a zone from the file `/home/hydra/default/config/zones.cfg`
backcolor	color name from `rgb.cfg` file	the background color
forecolor	color name from `rgb.cfg` file	the foreground color
logoclock	`true | false`	clock is a logo clock or not
logo		the image name to be used in the logoclock a file from the folder `/flash/logo`

Logo

entry	value	meaning
bitmap		The name of the bitmap file a file from the folder `/flash/logo` (if animated is false) or from `/flash/anim` (if animated is true)
animated	`true | false`	the bitmap is from the folder `anim` or from the folder `logo`

Timer

entry	value	meaning
backcolor	color name from `rgb.cfg` file	the background color
forecolor	color name from `rgb.cfg` file	the foreground color
today	`true | false`	destination time is today / tomorrow
stopH	`1, .. , 12` (if twelve is true) | `0, .. , 23` (if twelve is false)	hours of destination time
stopM	`0, .. , 59`	minutes of destination time
stopS	`0, .. , 59`	seconds of destination time
twelve	`true | false`	12h / 24h timer on/off

Viewer

entry	value	meaning
address		IP address of VNC server
pixelmetrix	`true | false`	a Pixelmetrix DVStation desktop viewer is used
scaling	`true | false`	apply scaling
filtering	`true | false`	apply filtering
blackwhite	`true | false`	apply black and white filtering

Application

entry	value	meaning
command		command to start application from `/home/hydra/flash/app`
environment		environment variables for the application
nowindow	`true | false`	Start an windowless application

Text

entry	value	meaning
line0		text for the first line
useline0	`true | false`	show this line
line1		text for the second line
useline1	`true | false`	show this line
line2		text for the third line
useline2	`true | false`	show this line
line3		text for the fourth line
useline3	`true | false`	show this line
alignment	`left | center | right`	alignment of the text
font		the fontname for the text
forecolor	color name from `rgb.cfg` file	the foreground color
backcolor	color name from `rgb.cfg` file	the background color

Stopwatch

entry	value	meaning
startH	`0, .. , 23`	hour of start time
startM	`0, .. , 59`	minutes of start time
startS	`0, .. , 59`	seconds of start time
stopH	`0, .. , 23`	hour of stop time
stopM	`0, .. , 59`	minutes of stop time
stopS	`0, .. , 59`	seconds of stop time
countdown	`true | false`	stopwatch in countdown mode
frames	`true | false`	show the frames (counter from 0 to 24)
font		the font used for the numbers
forecolor	color name from `rgb.cfg` file	the color of the numbers
transcolor	color name from `rgb.cfg` file	the color of the numbers in the last 10 seconds
destcolor	color name from `rgb.cfg` file	the color of the numbers when the destination is reached
backcolor	color name from `rgb.cfg` file	the background color of the object

Alarm

entry	value	meaning
font		the font for the text of the alarmlines
forecolor	color name from `rgb.cfg` file	the color of the text
gridcolor	color name from `rgb.cfg` file	the grid color
backcolor	color name from `rgb.cfg` file	the background color

UMD

entry	value	meaning
lines	`1, 2, .., 16`	the number of enabled lines
The following entries are listed per each active line with the line index (`x = 0, 1, .., lines`) appended:		
caption[x]		If usevar is false, the text is displayed
variable[x]	a number between `0` to `255`	selection of a distinct text string as defined with the `adjustvariable` command, if usevar is true
usevar[x]	`true | false`	use an adjustvariable text
alignment[x]	`left | center | right`	alignment of the text
font[x]		fontname
foreground[x]	color name from `rgb.cfg` file	the font color
useforegr[x]	`true | false`	use this font color
background[x]	color name from `rgb.cfg` file	the background color
usebackgr[x]	`true | false`	use this background color
separator[x]	color name from `rgb.cfg` file	the color of the separator of two lines
sepheight[x]	a value between `0` and `20`	the height of the separator

Tally

entry	value	meaning
dimx	`1, 2, .., 16`	the number of tallies in x direction
dimy	`1, 2, .., 16`	the number of tallies in y direction with `dimx * dimy ≤ 16`
backcolor	color name from `rgb.cfg` file	the background color
gridcolor	color name from `rgb.cfg` file	the grid color
gridwidth	a value from `0` to `20`	the width of the grid lines
tallyoverlayused	`true | false`	use text on top of the tallies
tallyoverlaycaption		a textline, if tallyoverlay is true
tallyoverlayforeground	color name from `rgb.cfg` file	the color of the text, if tallyoverlay is true
tallyoverlayfont		the font of the text, if tallyoverlay is true
tallyoverlayalignment	`left | center | right`	the alignment of the text, if tallyoverlay is true
The following entries are listed per each tally with the index (`x = 0, 1, .., dimx * dimy -1`) appended:		
source[x]	a value from `0` to `179`	selection of the tally of a source.
software[x]	a value from `0` to `255`	selection of a software tally
usesource[x]	`true | false`	use source tally (true) or software tally (false)
shape[x]	`Round | Square`	the shape of the tally
oncolor[x]	color name from `rgb.cfg` file	color in ON state
offcolor[x]	color name from `rgb.cfg` file	color in OFF state
state[x]	`true | false`	Applicable for software tallies (`usesource[x]` is false) `state` is true: `oncolor[x]` and `offcolor[x]` are used to indicate the tally state `state` is false: color definition for a tally state set with the **adjusttally** command, is used. Please refer to section 11.3.10 Tally related commands.

Wall layout

A wall layout file stores the arrangement of layouts for the whole wall. Please refer also to section 5.2.1 Wall Layout for more detailed information. A wall layout file contains an enumeration of **Module** blocks.

entry	value	meaning
Module	–	the type of the block
name		module name
layout		layout name to load

Stream configuration

The file `streams_config` stores the configuration setting of the video streams. Please refer also to section 5.3.6 Setup streams for more detailed information. A stream configuration file contains an enumeration of **Stream** blocks.

entry	value	meaning
Stream	–	the type of the block
name		the name of the stream
casting	`0` = unicast, `1` = multicast, `2` = broadcast	type of the stream
address		the multicast address to listen to
port		the portnumber to use
encoder		the name of the encoder used in the `encoders_config` file
encoderaddr		the IP address of the encoder
encoderport		the port to connect to
videopid		the video PID

Encoder configuration

The file `encoders_config` stores the configuration setting of the video encoders. Please refer also to section 5.3.5 Setup encoders for more detailed information. An encoder configuration file contains an enumeration of **Encoder** blocks

entry	value	meaning
Encoder	–	the type of the block
name		the name of the encoder
startskip		amount of bytes skipped at the start of an IP-packet
stopskip		amount of bytes skipped at the end of an IP-packet
streamtype	`Auto | Elementary | Program | Transport`	type of the video stream
usetcp	`true | false`	usage of TCP
usertp	`true | false`	usage of RTP
tcp		TCP string to send to the encoder

11.3.5 Wall related commands

This section lists all commands which request information of the whole wall or which are applied to the whole wall.

To manage the stored bitmap files the following two commands are available:

Get list anims

Get list with all available animation files.

Send	`<COMMAND ID="getlistanims" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<FILE ID="barco1.gif"></FILE>`
	`<FILE ID="barco2.gif"></FILE>`
	`...`
	`</COMMANDRESULT>`

See also	getlistlogos

Get list logos

Get list with all available logo files (bitmaps).

Send	`<COMMAND ID="getlistlogos" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<FILE ID="barco.gif"></FILE>`
	`<FILE ID="istudio.jpg"></FILE>`
	`...`
	`</COMMANDRESULT>`

See also	getlistanims

With the following commands configuration parameters of the wall can be managed:

Get setup usermode

Get the user mode setup of the HYDRA wall.

Send	`<COMMAND ID="getsetupusermode" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<LINE>...</LINE>`
	`...`
	`</COMMANDRESULT>`
	Between the line tags are the lines of the user mode setup, see table below.

See also	setsetupusermode

The following five lines (between LINE elements) are returned:

lines - top to bottom	explanation
<LINE>adminpassword</LINE>	the administrator password
<LINE>userpassword</LINE>	the user password
<LINE>0</LINE>	The default language is represented by a number according to the order in the language menu in the iStudio GUI, starting from **0**.
<LINE>511</LINE>	The user privileges are represented by the decimal representation of a bit flag. The positions 876543210 stand for the items: 0: save items 1: delete saved items 2: halt 3: reset 4: setup module 5: setup source 6: setup module or wall time 7: setup color 8: clear all alarms The privileges for a user who is allowed to save items and setup color would result in the bit flag 010000001. After conversion to decimal representation, this would result in 129. The value 511 represents full user privileges (every flag is set).
<LINE>1</LINE>	user interface settings are also represented by the decimal representation of a bit flag. Only one bit is used: 0: use fast view tree.

Set setup usermode

Set the user mode setup of the Hydra wall.

Send	<COMMAND ID="setsetupusermode" SERIAL="example"> <LINE>...</LINE> ... </COMMAND> Between the line tags are the lines of the user mode setup, please see getsetupusermode above.
Receive	<COMMANDRESULT SERIAL="example" ERROR="0"> </COMMANDRESULT>
See also	getsetupusermode

Get setup colors

Get a list of the available colors in form of a list with the RGB color triples (values from 0 to 255) and names.

Send	<COMMAND ID="GETSETUPCOLORS" SERIAL="example"> </COMMAND>
Receive	<TRANSACTIONRESULT SERIAL="serial" ERROR="0"> <COMMANDRESULT SERIAL="example" ERROR="0"> <LINE> 51 51 51 audiobackground</LINE> <LINE>127 127 127 audiobarbackground</LINE> ... </COMMANDRESULT> Between the line tags are the lines of the color setup.
See also	setsetupcolors

Set setup colors

Replace the available colors with this list of RGB color triples (values from 0 to 255) and names.

This command replaces the complete existing list with the values you send. Therefore take care that you do not delete the list by accident by sending just the desired changes. Always send a complete list of colors!

In case that you need to restore the original list of colors you can use the colors file from the iStudio CD ROM. Please refer to section 8.1 Data structure and data access for an instruction.

Send

```
<COMMAND ID="setsetupcolors" SERIAL="example">
<LINE> 51  51  51   audiobackground</LINE>
<LINE>127 127 127   audiobarbackground</LINE>
...
</COMMAND>
```

Between the line tags are the lines of the color setup.

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

See also setsetupcolors

Set wall time

Set date and time of all modules of the Hydra wall.

It might take up to 30 seconds before the adjusted time is visible on the projection modules. This is especially valid, if the time is set back.

Send

```
<COMMAND ID="setwalltime" SERIAL="example">
<TIME>
<HOUR>15</HOUR>
<MINUTE>12</MINUTE>
<SECOND>9</SECOND>
<DAY>20</DAY>
<MONTH>6</MONTH>
<YEAR>2001</YEAR>
</TIME>
</COMMAND>
```

Specify: new time and date

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

See also getmoduletime, setmoduletime

Get timings

Get all the supported timings with their configuration.

Send

```
<COMMAND ID="gettimings" SERIAL="example">
</COMMAND>
```

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
<LINE>...</LINE>
...
</COMMANDRESULT>
```

Between the line tags are the lines of the timings configuration.

Get wall

Get the configuration of the HYDRA wall.

Send	`<COMMAND ID="getwall" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<WALL ID="hydrawall">`
	`<MODULE ID="module1" ADDRESS="150.158.196.151"></MODULE>`
	`<MODULE ID="module2" ADDRESS="150.158.196.152"></MODULE>`
	`<MODULE ID="module3" ADDRESS="150.158.196.153"></MODULE>`
	`</WALL>`
	`</COMMANDRESULT>`

See also	getmodule

Get version

Get version information of the iSTUDIO software (HYDRA) and XML interface. The version of the XML interface specifies the highest supported version of packets.

Send	`<COMMAND ID="getversion" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<VERSION ID="HYDRA">1.2.0</VERSION>`
	`<VERSION ID="XML">1.0</VERSION>`
	`</COMMANDRESULT>`

These commands trigger actions for the whole wall:

Load wall layout and update

Load and update a wall layout.

Send	`<COMMAND ID="loadwalllayoutandupdate" SERIAL="example">`
	`<LAYOUT ID="wlayout1"></LAYOUT>`
	`</COMMAND>`
	Specify: wall layout name

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`

Software reset wall

Reset the software of all modules of the wall.

Send	`<COMMAND ID="SOFTWARERESETWALL" SERIAL="example">` `</COMMAND>`
Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	haltmodule, haltwall, rebootwall, rebootmodule, resetmodule, softwareresetmodule

Reset wall

Reset all the modules of the HYDRA wall.

Send	`<COMMAND ID="resetwall" SERIAL="example">` `</COMMAND>`
Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	haltmodule, haltwall, rebootmodule, resetmodule, resetmodule

Reboot wall

Reboot all modules of the HYDRA wall.

Send	`<COMMAND ID="rebootwall" SERIAL="example">` `</COMMAND>`
Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	haltmodule, haltwall, rebootmodule, resetmodule, softwareresetmodule, softwareresetwall

Halt wall

Halt all the modules of the HYDRA wall.

Send	`<COMMAND ID="haltwall" SERIAL="example">` `</COMMAND>`
Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	haltmodule, rebootwall, rebootmodule, resetmodule, softwareresetmodule, softwareresetwall

11.3.6 Module related commands

This section lists all commands which are applied to one or multiple dedicated HYDRA modules or which get information of a single module.

The following commands can be used to manage module related information:

Get module

Get the name of the module where you are connected to.

Send	`<COMMAND ID="getmodule" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<MODULE ID="module1"></MODULE>`
	`</COMMANDRESULT>`

See also	getwall

Get layout

Get the parameters of the active layout of the specified module. These are the parameters of the layout that is currently displayed on the module. In case that the layout has been changed but the changes are not yet saved, the parameters of the changed layout are delivered.

Send	`<COMMAND ID="getlayout" SERIAL="example">`
	`<MODULE ID="module1"></MODULE>`
	`</COMMAND>`
	For each module specify: module name.

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<MODULE ID="module1">`
	`<LAYOUT>`
	`<LINE>...</LINE>`
	`...`
	`</LAYOUT>`
	`</MODULE>`
	`</COMMANDRESULT>`
	Between the line tags are the lines of the layout.

See also	loadlayoutandupdate, updatelayout

Get log file

Get the log file of a HYDRA module.

Send	`<COMMAND ID="getlogfile" SERIAL="example">`
	`<MODULE ID="module1"></MODULE>`
	`</COMMAND>`
	For each log file specify: module name

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<MODULE ID="module1">`
	`<LINE>...</LINE>`
	`...`
	`</MODULE>`
	`</COMMANDRESULT>`
	Between the line tags are the lines of the log file.

See also	clearlogfile

Clear log file

Clear the log file of a HYDRA module.

Send	`<COMMAND ID="clearlogfile" SERIAL="example">`
	`<MODULE ID="module1"></MODULE>`
	`<MODULE ID="module2"></MODULE>`
	`</COMMAND>`
	For each log file specify: module name

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	getlogfile

Get module time

Get the current time and date of a HYDRA module. This is the internal time the HYDRA was set to. Timezone assignments are not considered.

Send	`<COMMAND ID="getmoduletime" SERIAL="example">`
	`<MODULE ID="module1"></MODULE>`
	`</COMMAND>`
	For each time and date: specify module

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<MODULE ID="module1">`
	`<HOUR>15</HOUR>`
	`<MINUTE>12</MINUTE>`
	`<SECOND>9</SECOND>`
	`<DAY>20</DAY>`
	`<MONTH>6</MONTH>`
	`<YEAR>2001</YEAR>`
	`</MODULE>`
	`</COMMANDRESULT>`

See also	setmoduletime, setwalltime

Set module time

Set date and time for a HYDRA module.

Send	`<COMMAND ID="setmoduletime" SERIAL="example">`
	`<MODULE ID="module1">`
	`<TIME>`
	`<HOUR>15</HOUR>`
	`<MINUTE>12</MINUTE>`
	`<SECOND>9</SECOND>`
	`<DAY>20</DAY>`
	`<MONTH>6</MONTH>`
	`<YEAR>2001</YEAR>`
	`</TIME>`
	`</MODULE>`
	`</COMMAND>`
	For each module specify: module name, new time and date

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	getmoduletime, setwalltime

Get setup module

Get the setup of a HYDRA module.

Send	`<COMMAND ID="getsetupmodule" SERIAL="example">`
	`<MODULE ID="module1"></MODULE>`
	`</COMMAND>`
	For each module specify: module name

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<MODULE ID="module1">`
	`<LINE>...</LINE>`
	`...`
	`</MODULE>`
	`</COMMANDRESULT>`
	Between the line tags are the lines of the module setup.

See also	getsetupsource, setsetupmodule, setsetupsource

Set setup module

Set the setup of a HYDRA module.

Note: The new settings will be effective after a reboot.

Send	`<COMMAND ID="setsetupmodule" SERIAL="example">`
	`<MODULE ID="module1">`
	`<LINE>...</LINE>`
	`...`
	`</MODULE>`
	`</COMMAND>`
	For each module specify: module name. Between the line tags are the lines of the module setup.

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	getsetupmodule, getsetupsource, setsetupsource

The following commands trigger module related actions:

Update layout

Transmit a layout to the module and update it.

Send	`<COMMAND ID="updatelayout" SERIAL="example">`
	`<MODULE ID="module1">`
	`<LAYOUT>`
	`<LINE>...</LINE>`
	`...`
	`</LAYOUT>`
	`</MODULE>`
	`</COMMAND>`
	For each layout specify: module name, new layout. Between the line tags are the lines of the new layout.

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	getlayout, loadlayoutandupdate

Load layout and update

Assign a stored layout to a module and update the module.

Send	`<COMMAND ID="loadlayoutandupdate" SERIAL="example">`
	`<MODULE ID="module1">`
	`<LAYOUT ID="4x4"></LAYOUT>`
	`</MODULE>`
	`<MODULE ID="module3">`
	`<LAYOUT ID="test"></LAYOUT>`
	`</MODULE>`
	`</COMMAND>`
	For each layout specify: module name, layout name

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`

Software reset module

Reset the software of the specified module.

Send	`<COMMAND ID="SOFTWARERESETMODULE" SERIAL="example">`
	`<MODULE ID="module2">`
	`</MODULE>`
	`</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	haltmodule, haltwall, rebootwall, rebootmodule, resetmodule, softwareresetwall

Reset module

Reset the specified module.

Send	`<COMMAND ID="resetmodule" SERIAL="example">`
	`<MODULE ID="module2">`
	`</MODULE>`
	`</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	haltmodule, haltwall, rebootwall, rebootmodule, softwareresetmodule, softwareresetwall

Reboot module

Reboot the specified module.

Note: If you want to reboot multiple modules and also the module where you are connected to, then put this module on the last place in the command. It is also more efficient to use **rebootwall** if you want to reboot all modules.

Send	`<COMMAND ID="rebootmodule" SERIAL="example">`
	`<MODULE ID="module3"></MODULE>`
	`<MODULE ID="module1"></MODULE>`
	`</COMMAND>`
	For each module specify: module name

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	haltmodule, haltwall, rebootwall, resetmodule, softwareresetmodule, softwareresetwall

Halt module

Halt the specified module.

Note: If you want to halt multiple modules and also the module where you are connected to, then put this module on the last place in the command. It is also more efficient to use **haltwall** if you want to halt all modules.

Send	`<COMMAND ID="haltmodule" SERIAL="example">`
	`<MODULE ID="module3"></MODULE>`
	`<MODULE ID="module1"></MODULE>`
	`</COMMAND>`
	For each module specify: module name

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	haltwall, rebootwall, rebootmodule, resetmodule, softwareresetmodule, softwareresetwall

11.3.7 Source related commands

These commands provide access to source related information and actions.

First the commands for administration of source parameters are listed:

Get source name

Get the names of sources of a module.

Send

```
<COMMAND ID="getsourcename" SERIAL="example">
<MODULE ID="module3">
<SOURCE ID="0"></SOURCE>
<SOURCE ID="10"></SOURCE>
<SOURCE ID="20"></SOURCE>
</MODULE>
</COMMAND>
```

For each source specify: module name and source number (0 - n).

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
<MODULE ID="module3">
<SOURCE ID="0">
<NAME>Video1</NAME>
</SOURCE>
<SOURCE ID="10">
<NAME>Camera11</NAME>
</SOURCE>
<SOURCE ID="20">
<NAME>Source21</NAME>
</SOURCE>
</MODULE>
</COMMANDRESULT>
```

See also getmodulestate, setsourcename

Set source name

Set name of a source of a module of the HYDRA wall.

Note: This command to set a source name is optimized for speed, which implicates that the source name is volatile. After restarting the HYDRA, the source name will always be reset to that name that is configured in the module setup. You will not see the change of the source name in the user interface source tree or module setup. But you can see the new name in the UMD of an object using the source.

Send

```
<COMMAND ID="setsourcename" SERIAL="example">
<MODULE ID="module1">
<SOURCE ID="5">
<NAME>Source5</NAME>
</SOURCE>
<SOURCE ID="11">
<NAME>Source11</NAME>
</SOURCE>
</MODULE>
<MODULE ID="module2">
<SOURCE ID="8">
<NAME>Source8</NAME>
</SOURCE>
</MODULE>
</COMMAND>
```

For each source specify: module name, source number (0-n), new name

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

See also getmodulestate, getsourcename

Get source state

Get the current state of the sources of a module of the HYDRA wall (this are for instance the detected parameters for video).

Send

```
<COMMAND ID="getsourcestate" SERIAL="example">
<MODULE ID="module1"></MODULE>
</COMMAND>
```

For each module specify: module name

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
<MODULE ID="module1">
<LINE>...</LINE>
...
</MODULE>
</COMMANDRESULT>
```

Between the line tags are the lines of the current state of the sources.

See also getmodulestate

Get module state

Get the state of all sources for a module of the HYDRA wall.

Note: Freeze is currently always 0. Further development of this element follows.

Send

```
<COMMAND ID="getmodulestate" SERIAL="example">
<MODULE ID="module1"></MODULE>
</COMMAND>
```

For each module specify: module name

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
<MODULE ID="module1">
<SOURCE ID="0" NAME="Source1">     source number and name
<ALARM>1</ALARM>                  1 if at least one alarm is active
                                      (object has a flashing border)
<FREEZE>0</FREEZE>                    1 if source is frozen
<TALLY ID="0">1</TALLY>               1 if tally 1 is active
<TALLY ID="1">0</TALLY>               1 if tally 2 is active
<TALLY ID="2">0</TALLY>               1 if tally 3 is active
</SOURCE>
...
</MODULE>
</COMMANDRESULT>
```

See also getsourcealarm, getsourcename, getsourcetally, getsourcestate

Get source freeze

Get the freeze-state of sources of a module of the HYDRA.

Send

```
<COMMAND ID="getsourcefreeze" SERIAL="example">
<MODULE ID="module2">
<SOURCE ID="0"></SOURCE>
<SOURCE ID="10"></SOURCE>
<SOURCE ID="20"></SOURCE>
</MODULE>
</COMMAND>
```

For each source specify: module name and source number (0 - n).

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
<MODULE ID="module2">
<SOURCE ID="0">0</SOURCE> 0 not frozen
<SOURCE ID="10">1</SOURCE> 1 frozen
<SOURCE ID="20">0</SOURCE>
</MODULE>
</COMMANDRESULT>
```

See also getmodulestate, setsourcefreeze

Set source freeze

Freeze or unfreeze a source of a module of the HYDRA wall.

Note: This command is not yet applicable. Further development of this element follows.

Send	`<COMMAND ID="setsourcefreeze" SERIAL="example">`
	`<MODULE ID="module2">`
	`<SOURCE ID="0">0</SOURCE>`
	`<SOURCE ID="10">1</SOURCE>`
	`<SOURCE ID="20">0</SOURCE>`
	`</MODULE>`
	`</COMMAND>`
	For each source specify: module name, source number (0 - n), new state.

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	getmodulestate, getsourcefreeze

Get source tally

Get the state of a tally of a source of a HYDRA module.

Send	`<COMMAND ID="getsourcetally" SERIAL="example">`
	`<MODULE ID="module2">`
	`<SOURCE ID="9">`
	`<TALLY ID="0"></TALLY>`
	`<TALLY ID="1"></TALLY>`
	`<TALLY ID="2"></TALLY>`
	`</SOURCE>`
	`<SOURCE ID="18">`
	`<TALLY ID="1"></TALLY>`
	`</SOURCE>`
	`</MODULE>`
	`</COMMAND>`
	For each tally specify: module name, source number (0-n), tally number (0-2)

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<MODULE ID="module2">`
	`<SOURCE ID="9">`
	`<TALLY ID="0">`
	`<STATE>0</STATE>`
	`</TALLY>`
	`<TALLY ID="1">`
	`<STATE>1</STATE>`
	`</TALLY>`
	`<TALLY ID="2">`
	`<STATE>0</STATE>`
	`</TALLY>`
	`</SOURCE>`
	`<SOURCE ID="18">`
	`<TALLY ID="1">`
	`<STATE>1</STATE>`
	`</TALLY>`
	`</SOURCE>`
	`</MODULE>`
	`</COMMANDRESULT>`

See also	getmodulestate, setsourcetally

Set source tally

Set tally state of a hardware output tally or a software tally of a source of a module of the HYDRA wall.

Send

```
<COMMAND ID="setsourcetally" SERIAL="example">
<MODULE ID="module2">
<SOURCE ID="8">
<TALLY ID="1">
<STATE>0</STATE>
</TALLY>
<TALLY ID="2">
<STATE>1</STATE>
</TALLY>
</SOURCE>
</MODULE>
</COMMAND>
```

For each source specify: module name, source number, tally number (0-2), tally state (0,1 [,2, 3])

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

See also getmodulestate, getsourcetally

Setsourcetally offers two additional tally states, which can only be set with this XML command (not available via the iSTUDIO GUI).

These two additional states are only applicable for source tallies in software mode!

The two additional tally states can only be viewed, if the tally is displayed in a UMD! In a tally object they do not become visible. In a tally object the tally states 2 and 3 look the same as the tally state 1.

Corresponding to the two additional states the colors **tally1state2**, **tally1state3** for tally 1 and **tally2state2**, **tally2state3** for tally 2 are available with the system colors.

Get source alarm

Get the state of all alarms for a source of a module of the HYDRA wall.

Send

```
<COMMAND ID="getsourcealarm" SERIAL="example">
<MODULE ID="module1">
<SOURCE ID="8"></SOURCE>
<SOURCE ID="17"></SOURCE>
</MODULE>
</COMMAND>
```

For each source specify: module name and source number (0 - n)

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
<MODULE ID="module1">
<SOURCE ID="8">
<ALARM ID="videoloss">
<ACTIVE>0</ACTIVE>
<CLEARED>0</CLEARED>
<STARTED>15:01:30</STARTED>
<STOPPED>15:05:09</STOPPED>
<STARTEDDATE>28/9/2005</STARTEDDATE>
<STOPPEDDATE>28/9/2005</STOPPEDDATE>
</ALARM>
<ALARM ID="audioloss">
<ACTIVE>1</ACTIVE>
<CLEARED>1</CLEARED>
<STARTED>15:10:23</STARTED>
<STARTEDDATE>30/9/2005</STARTEDDATE>
</ALARM>
</SOURCE>
<SOURCE ID="17"></SOURCE>
</MODULE>
</COMMANDRESULT>
```

See also clearsourcealarm, getalarmlist

Clear source alarm

Clear an alarm of a source on a module of the HYDRA wall.

Send	`<COMMAND ID="clearsourcealarm" SERIAL="example">`
	`<MODULE ID="module1">`
	`<SOURCE ID="5">`
	`<ALARM ID="videoloss"></ALARM>`
	`<ALARM ID="audioloss"></ALARM>`
	`</SOURCE>`
	`<SOURCE ID="12">`
	`<ALARM ID="videoloss"></ALARM>`
	`</SOURCE>`
	`</MODULE>`
	`</COMMAND>`
	For each alarm specify: module name, source number (0 - n), alarm name.

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	getlistalarms, getsourcealarm

The following commands are useful to configure a source:

Get setup source

Get the setup of all sources of a module.

Send	`<COMMAND ID="getsetupsource" SERIAL="example">`
	`<MODULE ID="module1"></MODULE>`
	`</COMMAND>`
	For each module specify: module name

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<MODULE ID="module1">`
	`<LINE>...</LINE>`
	`...`
	`</MODULE>`
	`</COMMANDRESULT>`
	Between the line tags are the lines of the sources setup.

See also	getsetupmodule, setsetupmodule, setsetupsource

Set setup source

Set setup of all sources of a module of the HYDRA wall. These changes become effective after a software reset, please refer to **resetmodule**.

Send	`<COMMAND ID="setsetupsource" SERIAL="example">`
	`<MODULE ID="module1">`
	`<LINE>...</LINE>`
	`...`
	`</MODULE>`
	`</COMMAND>`
	For each module specify: module name. Between the line tags are the lines of the sources setup.

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	getsetupmodule, getsetupsource, setsetupmodule

Adjust UMD background on source

Adjust the background color for UMD lines for the specified sources of the specified modules.

Send	`<COMMAND ID="adjustumdbackgroundonsource" SERIAL="example">`
	`<MODULE ID="module1">`
	`<SOURCE ID="0">`
	`<COLOR>blue</COLOR>`
	`</SOURCE>`
	`<SOURCE ID="1">`
	`<COLOR>green</COLOR>`
	`</SOURCE>`
	`</MODULE>`
	`</COMMAND>`
	For each module specify: module name, source number, UMD background color

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	adjustumdonsource

Adjust UMD on source

Adjust the UMD captions for the specified sources of the specified modules.

Send	`<COMMAND ID="adjustumdonsource" SERIAL="example">`
	`<MODULE ID="myHydra">`
	`<SOURCE ID="5">`
	`<LINE ID="0">line1</LINE>`
	`<LINE ID="1">line2</LINE>`
	`</SOURCE>`
	`<SOURCE ID="1">`
	`<LINE ID="0">line1</LINE>`
	`<LINE ID="1">line2</LINE>`
	`</SOURCE>`
	`</MODULE>`
	`</COMMAND>`
	For each module specify: module name, source number, UMD captions

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	adjustumdbackgroundonsource

Get alarm config

Get the configuration of all alarms of a source.

Send

```
<COMMAND ID="getalarmconfig" SERIAL="example">
<module id="module1">
<source id=0></source>
</module>
</COMMAND>
```

For each source specify: module name, source number (0 - n)

Receive

```
<COMMANDRESULT SERIAL=" example " ERROR="0">
<MODULE ID=" module1">
<SOURCE ID="0">
<ALARM ID="videoloss">
<ACTIVATED>0</ACTIVATED>
<AUTO>1</AUTO>
<SHOWINALARMLIST>1</SHOWINALARMLIST>
<SHOWINOBJECT>1</SHOWINOBJECT>
<SNMP>0</SNMP>
<LOGALARM>0</LOGALARM>
<BUZZER>0</BUZZER>
<DELAYBEFOREACTIVE>0</DELAYBEFOREACTIVE>
<DELAYBEFOREAUTOCLEAR>0</DELAYBEFOREAUTOCLEAR>
</ALARM>
...
</SOURCE>
</MODULE>
</COMMANDRESULT>
```

Between the alarm tags are the tags with the settings of the alarm parameters.

See also getsetupmodule, setsetupmodule, setsetupsource

Set alarm config

Set the configuration of single alarms of a source.

Send

```
<COMMAND ID="setalarmconfig" SERIAL="example">
<module id="module1">
<source id="0">
<alarm id="videoloss">
<activated>0</activated>
<auto>1</auto>
<showinalarmlist>1</showinalarmlist>
<showinobject>1</showinobject>
<snmp>1</snmp>
<buzzer>1</buzzer>
<logalarm>1</logalarm>
<delaybeforeactive>10</delaybeforeactive>
<delaybeforeautoclear>10</delaybeforeautoclear>
</alarm>
</source>
</module>
</COMMAND>
```

In the alarm tag specify the alarm name; between the start and end of the tag specify the settings of the alarm parameters.

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

See also getsetupmodule, getsetupsource, setsetupmodule

These commands are used to configure video streams.

Add stream

Define a video stream with its parameters.

Note: This command stores the stream parameters without any notice, even though a stream with this STREAM_ID might already exist. Therefore carefully check in advance not to overwrite information you still need.

You must use **initstreams** afterwards to initialize the streams.

Send	`<COMMAND ID="addstream" SERIAL="example">`
	`<STREAM ID="video_stream3">`
	`<CASTING>0</CASTING>`
	`<ADDRESS>150.158.194.195</ADDRESS>`
	`<PORT>6662</PORT>`
	`<ENCODER>theencoder</ENCODER>`
	`<ENCODERADDRESS>150.158.231.8</ENCODERADDRESS>`
	`<ENCODERPORT>3231</ENCODERPORT>`
	`<VIDEOPID>0</VIDEOPID>`
	`</STREAM>`
	`</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	Setstream, Deletestream, Initstreams

The following values can be used with the CASTING element:

0	unicast
1	multicast
2	broadcast

Set stream

Assign a specific stream on a certain module to a certain source. To each streaming video source a stream should be specified.

Send	`<COMMAND ID="setstream" SERIAL="example">`
	`<MODULE ID="module2">`
	`<SOURCE ID="0">`
	`<STREAM ID="stream1">`
	`</STREAM>`
	`</SOURCE>`
	`</MODULE>`
	`</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	Addstream, Deletestream, Initstreams

Initstreams

After defining streams with the addstream command, the stream_config file has to be reinitialized to enable iStudio to use these streams. This is done with the **initstream** command. It is sufficient to call initstreams once after adding multiple streams.

Send	`<COMMAND ID="INITSTREAMS" SERIAL="example">` `</COMMAND>`
Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	Addstream, Deletestream, Setstream

Deletestream

Delete the definition of a video stream.

You must use **initstreams** afterwards to make changes effective.

Send	`<COMMAND ID="deletestream" SERIAL="example">`
	`<STREAM ID="video_stream5">`
	`</STREAM>`
	`</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">` `</COMMANDRESULT>`
See also	Addstream, Setstream, Initstreams

11.3.8 Alarm related commands

To administrate alarm related information to following commands are available:

Get list alarms

Get a list of all alarms that the system supports.

Send	`<COMMAND ID="getlistalarms" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<ALARM ID="videoloss></ALARM>`
	`...`
	`<ALARM ID="audioloss></ALARM>`
	`...`
	`</COMMANDRESULT>`

See also	clearsourcealarm, getsourcealarm

Get alarms

Get a list of the configuration of all alarms.

Send	`<COMMAND ID="getalarms" SERIAL="example">` `</COMMAND>`

Receive	`<COMMANDRESULT SERIAL="example" ERROR="0">`
	`<LINE>...</LINE>`
	`...`
	`</COMMANDRESULT>`
	Between the line tags are the lines of the alarm configuration.

See also	getlistalarms

Each alarm in the list starts with a line containing the word `alarm` and ends with a line containing the word `end`. The table below shows the lines returned for a typical alarm:

lines - top to bottom	explanation
`<LINE>Alarm</LINE>`	start of the alarm section
`<LINE>name = videoblack</LINE>`	name of the alarm
`<LINE>params = 1</LINE>`	Parameter definition 0 no parameters 1 there are parameters
`<LINE>param1id = 5001</LINE>`	*for internal use*
`<LINE>param1min = 0</LINE>`	minimum value this alarm can have
`<LINE>param1max = 255</LINE>`	maximum value this alarm can have
`<LINE>param1def = 0</LINE>`	default value of this alarm
`<LINE>param1div = 1</LINE>`	*for internal use*
`<LINE>end</LINE>`	end of the alarm section

11.3.9 Object related commands

To change the properties of an object the following commands are available:

Adjust border

Adjust the border color of an object of the active layout.

Send

```
<COMMAND ID="adjustborder" SERIAL="example">
<MODULE ID="module1">
<OBJECT ID="object1">green2</OBJECT>
<OBJECT ID="object2">yellow</OBJECT>
</MODULE>
</COMMAND>
```

For each object specify: module name, object name, border color.

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

Adjust stopwatch

Adjust the parameters of a stopwatch object of the active layout.

Send

```
<COMMAND ID="adjuststopwatch" SERIAL="example">
<MODULE ID="module1">
<OBJECT ID="stopwatch1">
<START>12:00:00</START>
<STOP>14:30:15</STOP>
<COUNTDOWN>1</COUNTDOWN>
</OBJECT>
<OBJECT ID="stopwatch2">
<START>22:20:00</START>
<STOP>02:48:00</STOP>
<COUNTDOWN>0</COUNTDOWN>
</OBJECT>
</MODULE>
</COMMAND>
```

For each object specify: module name, object name, start time, stop time, countdown (0/1).

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

Adjust text

Adjust the text lines of a text object of the active layout.

Send

```
<COMMAND ID="adjusttext" SERIAL="example">
<MODULE ID="module1">
<OBJECT ID="text1">
<LINE ID="0">Line1</LINE>
<LINE ID="8">Line9</LINE>
<LINE ID="15">Line16</LINE>
</OBJECT>
<OBJECT ID="text2">
<LINE ID="14">Text</LINE>
</OBJECT>
</MODULE>
</COMMAND>
```

For each object specify: module name, object name, line number (0-15), caption.

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

Adjust UMD

Adjust the UMD captions of an object of the active layout.

Send

```
<COMMAND ID="adjustumd" SERIAL="example">
<MODULE ID="module1">
<OBJECT ID="object1">
<LINE ID="0">Line1</LINE>
<LINE ID="1">Line2</LINE>
</OBJECT>
<OBJECT ID="object2">
<LINE ID="1">Text</LINE>
</OBJECT>
</MODULE>
</COMMAND>
```

For each object specify: module name, object name, line number (0-1), caption.

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

Adjust variable

Adjust the caption, the foreground color or the background color of a text variable.

Note: To send unicode characters, use `&#<decimal unicode>`; for instance for the unicode character `30A1`, use `ビ`

Send

```
<COMMAND ID="adjustvariable" SERIAL="example">
<MODULE ID="module1">
<VARIABLE ID="10">
<CAPTION>Caption 10</CAPTION>
<FOREGROUND>red</FOREGROUND>
</VARIABLE>
<VARIABLE ID="25">
<BACKGROUND>green</BACKGROUND>
</VARIABLE>
<VARIABLE ID="111">
<CAPTION>Caption 111</CAPTION>
</VARIABLE>
</MODULE>
</COMMAND>
```

For each variable specify: module name, variable number (0-255), caption / foreground / background .

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

11.3.10 Tally related commands

To administrate tally related information the following commands are available:

Adjust tally

This command applies to software tallies only.

It serves to set the state or color of a software tally. State as well as color information can be transmitted with the command at the same time. But whether the one or the other is applied, depends on the state of the state entry of a tally object (section 11.3.4 File content) and the state checkbox on the Properties tab of a tally object (section 5.6.4 Edit object...) respectively. If that state entry is true, then the tally state information will be adapted; if that state entry is false, then the color of the tally will be adjusted accordingly.

Information, which was sent while it could not be applied due to the state of the state entry, will be applied as soon as that state entry changes.

Send

```
<COMMAND ID="adjusttally" SERIAL="example">
<MODULE ID="module1">
<TALLY ID="0"><STATE>1</STATE></TALLY>
<TALLY ID="80"><STATE>0</STATE></TALLY>
<TALLY ID="120"><COLOR>green</COLOR></TALLY>
<TALLY ID="200">
<STATE>1</STATE>
<COLOR>red</COLOR>
</TALLY>
</MODULE>
</COMMAND>
```

For each object specify: module name, tally number (0-255), state (0, 1) / color (color name from `rgb.cfg` file)

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

Set source tally on object

Set the tally state of a hardware output tally or a software tally of the video object with the indicated name (object ID).

Send

```
<COMMAND ID="setsourcetallyonobject" SERIAL="example">
<MODULE ID="module1">
<OBJECT ID="myobjectname">
<TALLY id="0">
<STATE>0</STATE>
</TALLY>
</OBJECT>
</MODULE>
</COMMAND>
```

For each object specify: module name, object name, tally number (0-2), tally state (0, 1 [, 2, 3])

Receive

```
<COMMANDRESULT SERIAL="example" ERROR="0">
</COMMANDRESULT>
```

Setsourcetallyonobject offers two additional tally states, which can only be set with this XML command (not available via the iStudio GUI).

These two additional states are only applicable for source tallies in software mode!

The two additional tally states can only be viewed, if the tally is displayed in a UMD! In a tally object they do not become visible. In a tally object the tally states 2 and 3 look the same as the tally state 1.

Corresponding to the two additional states the colors **tally1state2**, **tally1state3** for tally 1 and **tally2state2**, **tally2state3** for tally 2 are available with the system colors.

11.3.11 Example

Send

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<TRANSACTION SERIAL="updatemodules" MODE="0">
<COMMAND ID="loadlayoutandupdate" SERIAL="module1">
<MODULE ID="module1">
<LAYOUT ID="layout1"></LAYOUT>
</MODULE>
</COMMAND>
<COMMAND ID="loadlayoutandupdate" SERIAL="module2">
<MODULE ID="module2">
<LAYOUT ID="layout2"></LAYOUT>
</MODULE>
</COMMAND>
<COMMAND ID="loadlayoutandupdate" SERIAL="module3">
<MODULE ID="module3">
<LAYOUT ID="layout3"></LAYOUT>
</MODULE>
</COMMAND>
</TRANSACTION>
</PACKET>
</XML>
```

Receive

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<TRANSACTIONRESULT SERIAL="updatemodules" ERROR="2">
<COMMANDRESULT SERIAL="module1" ERROR="1">
</COMMANDRESULT>
<COMMANDRESULT SERIAL="module2" ERROR="0">
</COMMANDRESULT>
<COMMANDRESULT SERIAL="module3" ERROR="1">
</COMMANDRESULT>
</TRANSACTIONRESULT>
</PACKET>
</XML>
```

11.4 Events

11.4.1 Definition

Events are messages that provide information about state changes on the HYDRA. They can come in at any time. By default all events are turned off. This means that you need to activate the events that you are interested in. You can also deactivate events once they are no longer useful. It is possible to open more than one event connection at the same time, and to specify for each connection specific events.

Enabling events can be done with a packet that looks like this:

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="eventname" SERIAL="example">
<ENABLE>
...
</ENABLE>
<DISABLE>
...
</DISABLE>
</EVENT>
</PACKET>
</XML>
```

You will receive a confirmation, which contains the serial and an error flag that indicates if your changes have been accepted:

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENTRESULT SERIAL="example" ERROR="0">
</EVENTRESULT>
</PACKET>
</XML>
```

When an event is enabled and generated, you will receive a packet like this:

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="eventname" ...>
...
</EVENT>
</PACKET>
</XML>
```

11.4.2 Events – OverView

All available events of the open XML protocol are listed in the table below in alphabetic order together with a short description. The related syntax can be found in the next section.

Event	Description
alarmchanged	an alarm of a source has changed
filechanged	a file has been saved or deleted
freezechanged	the freeze-state of a source has changed
modulechanged	a module setup has been changed
layoutchanged	the layout for a module has been updated
sourcechanged	a source setup has been changed
tallychanged	the tally state of a source has changed
wallchanged	the configuration of the wall has changed

Table 11-2
Overview of events

11.4.3 Available events

Alarm changed

This event enables the monitoring of all or specific alarms. Please note that only the alarms that are enabled in the source setup of a module are useful. The full list of available source related alarms can be found in the iStudio user interface or can be requested with the **getlistalarms** command. A few examples of alarms are **videoloss**, **videoblack**, **videowhite** and **audioloss**.

Furthermore the module related **ntpsynchrolost** alarm is available. It refers to the module not to a source and is therefore addressed as source no. `-1`.

Within the <ALARMCHANGED> element the following elements might be:

- <ENABLEALLMODULE> element
  to enable all alarms of a module. Specify module
- <DISABLEALLMODULE> element
  to disable all alarms of a module. Specify module
- <ENABLEALLSOURCE> element
  to enable all alarms of a source. Specify module and source.
- <DISABLEALLSOURCE> element
  to disable all alarms of a source. Specify module and source.
- <ENABLE> element
  to enable a specific alarm. Specify module, source and alarmtype.

Enable / disable

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="alarmchanged" SERIAL="example">
<ENABLEALLMODULE>
<MODULE ID="module1"></MODULE>                Enable all alarms for this module
</ENABLEALLMODULE>
<DISABLEALLMODULE>
<MODULE ID="module2"></MODULE>                Disable all alarms for this module
<MODULE ID="module3"></MODULE>
</DISABLEALLMODULE>
<ENABLEALLSOURCE>
<MODULE ID="module4">
<SOURCE ID="29"></SOURCE>                     Enable all alarms on this source
<SOURCE ID="19"></SOURCE>
<SOURCE ID="9"></SOURCE>
</MODULE>
</ENABLEALLSOURCE>
<DISABLEALLSOURCE>
<MODULE ID="module5">
<SOURCE ID="11"></SOURCE>                     Disable all alarms for this source
</MODULE>
</DISABLEALLSOURCE>
<ENABLE>
<MODULE ID="module3">
<SOURCE ID="11">
<ALARM ID="videoblack"></ALARM>               Enable this alarm for this source
<ALARM ID="videowhite"></ALARM>
</SOURCE>
</MODULE>
</ENABLE>
<DISABLE>
<MODULE ID="module2">
<SOURCE ID="21">
<ALARM ID="videoloss"></ALARM>                Disable this alarm for this source
</SOURCE>
</MODULE>
</DISABLE>
</EVENT>
</PACKET>
</XML>
```

Incoming event

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="alarmchanged" CHANGE="active">    active, solved, cleared
<MODULE ID="module3">
<SOURCE ID="17">
<ALARM ID="videoloss">
<ACTIVE>1</ACTIVE>
<CLEARED>0</CLEARED>
<STARTED>09:19:32</STARTED>
<STARTEDDATE>29/9/2005</STARTEDDATE>
</ALARM>
</SOURCE>
<SOURCE ID="-1">
<ALARM ID="ntpsynchrolost">
<ACTIVE>1</ACTIVE>
<CLEARED>0</CLEARED>
<STARTED>10:58:15</STARTED>
<STOPPED>10:58:15</STOPPED>
<STARTEDDATE>29/9/2005</STARTEDDATE>
<STOPPEDDATE>29/9/2005</STOPPEDDATE>
<FLAGS>1</FLAGS>
</ALARM>
</SOURCE>
</MODULE>
</EVENT>
<EVENT ID="alarmchanged" CHANGE="cleared">
<MODULE ID="module1">
<SOURCE ID="7">
<ALARM ID="audioloss">
<ACTIVE>0</ACTIVE>
<CLEARED>1</CLEARED>
<STARTED>09:19:33</STARTED>
<STOPPED>09:19:34</STOPPED>
<STARTEDDATE>29/9/2005</STARTEDDATE>
<STOPPEDDATE>29/9/2005</STOPPEDDATE>
</ALARM>
</SOURCE>
</MODULE>
</EVENT>
</PACKET>
</XML>
```

See also getlistalarms, getmodulestate, getsourcealarm

File changed

This event reports that a file has been saved or deleted on the wall.

Enable / disable

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="filechanged" SERIAL="example">
<ENABLE></ENABLE>                          enable file events
<DISABLE></DISABLE>                        disable file events
</EVENT>
</PACKET>
</XML>
```

Incoming event

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="filechanged"></EVENT>
</PACKET>
</XML>
```

See also deletefile, getlistfiles, savefile

Freeze changed

This event reports that a source has been frozen or unfrozen on a module of the wall.

Enable / disable

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="freezechanged" SERIAL="example">
<ENABLE>
<MODULE ID="module1">
<SOURCE ID="1"></SOURCE>
<SOURCE ID="2"></SOURCE>
</MODULE>
</ENABLE>
<DISABLE>
<MODULE ID="module2">
<SOURCE ID="12"></SOURCE>
</MODULE>
<MODULE ID="module3">
<SOURCE ID="21"></SOURCE>
</MODULE>
</DISABLE>
</EVENT>
</PACKET>
</XML>
```

Incoming event

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="freezechanged">
<MODULE ID="module1">
<SOURCE ID="2"></SOURCE>
</MODULE>
</EVENT>
</PACKET>
</XML>
```

See also getmodulestate, getsourcefreeze, setsourcefreeze

Layout changed

This event reports that a layout has been updated on a module of the wall.

Enable / disable

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="layoutchanged" SERIAL="example">
<ENABLE>
<MODULE ID="module1"></MODULE>
<MODULE ID="module3"></MODULE>
</ENABLE>
<DISABLE>
<MODULE ID="module2"></MODULE>
</DISABLE>
</EVENT>
</PACKET>
</XML>
```

Incoming event

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="layoutchanged">
<MODULE ID="module1"></MODULE>
</EVENT>
</PACKET>
</XML>
```

See also getlayout, loadlayoutandupdate, updatelayout

Module changed

This event reports that the module setup has changed of a module of the wall.

Enable / disable

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="modulechanged" SERIAL="example">
<ENABLE>
<MODULE ID="module1"></MODULE>
</ENABLE>
<DISABLE>
<MODULE ID="module2"></MODULE>
<MODULE ID="module3"></MODULE>
</DISABLE>
</EVENT>
</PACKET>
</XML>
```

Incoming event

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="modulechanged">
<MODULE ID="module1"></MODULE>
</EVENT>
</PACKET>
</XML>
```

See also getsetupmodule, setsetupmodule

Source changed

This event reports that the setup of a source of a module of the wall has changed.

Note: Currently use with source 0. All sources are changed in parallel so a change of source 0 means a change of all sources. Other sources can be added, but will have no effect.

Enable / disable

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="sourcechanged" SERIAL="example">
<ENABLE>
<MODULE ID="module1">
<SOURCE ID="0"></SOURCE>
<SOURCE ID="10"></SOURCE>
<SOURCE ID="20"></SOURCE>
</MODULE>
</ENABLE>
<DISABLE>
<MODULE ID="module2">
<SOURCE ID="0"></SOURCE>
</MODULE>
</DISABLE>
</EVENT>
</PACKET>
</XML>
```

Incoming event

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="sourcechanged">
<MODULE ID="module1">
<SOURCE ID="0"></SOURCE>
</MODULE>
</EVENT>
</PACKET>
</XML>
```

See also getsetupsource, setsetupsource

Tally changed

This event reports that the tally state of a source of a module of the wall has changed.

Enable / disable

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="tallychanged" SERIAL="example">
<ENABLE>
<MODULE ID="module1">
<SOURCE ID="0"></SOURCE>
<SOURCE ID="10"></SOURCE>
</MODULE>
</ENABLE>
<DISABLE>
<MODULE ID="module1">
<SOURCE ID="20"></SOURCE>
</MODULE>
</DISABLE>
</EVENT>
</PACKET>
</XML>
```

Incoming event

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="tallychanged">
<MODULE ID="module1">
<SOURCE ID="0">
<TALLY ID="2">1</TALLY>                      tally 2 of source 0 is now on
</SOURCE>
<SOURCE ID="10">
<TALLY ID="0">0</TALLY>                      tally 0 of source 10 is now off
</SOURCE>
</MODULE>
</EVENT>
</PACKET>
</XML>
```

See also getmodulestate, getsourcetally, setsourcetally

Wall changed

This event reports that the configuration of the wall has changed: modules are added or removed.

Enable / disable

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="wallchanged" SERIAL="example">
<ENABLE></ENABLE>                            enable wall events
<DISABLE></DISABLE>                          disable wall events
</EVENT>
</PACKET>
</XML>
```

Incoming event

```
<XML>
<PACKET MODULE="HYDRA" VERSION="1.0">
<EVENT ID="wallchanged"></EVENT>
</PACKET>
</XML>
```

See also getwall, haltmodule, rebootmodule

12 Appendix B – Hydra scripting language definition v1.0

Special functionality that is not applicable via the iStudio software can be used by means of the Hydra scripting language. But the XML open protocol provides the whole functionality of the Hydra scripting language in a powerful and user-friendly way and will be extended and supported further on. Therefore we recommend strictly to use the XML open protocol instead of the Hydra scripting language, please refer to section 11 Appendix A - Hydra Open Protocol.

The Hydra scripting language is part of the iStudio user's manual just for the reason of compatibility and completeness. There is no guarantee that the Hydra scripting language will be supported in future iStudio releases!

12.1 How to use scripts without the user interface

- only one user script can be executed at a time on each module, this means that your script will have to wait until a running script terminates before it will be executed (the script server allows more than 10 pending connections).
- create a client TCP socket with the address of the HYDRA module (e.g. 150.158.196.151) and with port 6767 and open the socket, if the connection succeeds, you can send your script line by line as ASCII text, for instance:

  ```
  begin\n
  module this\n
  output this\n
  end\n
  ```

- wait for the script to execute, when the script contains a never-ending loop you will have to stop it by sending: **`stop`**`\n` or by simply closing the socket if you are not interested in output
- messages send with the **message** command can be received on the fly while the script is executing, messages are received in the following format : `>message\n` , e.g. `>This is a script message\n.`
- after the script is executed/stopped you will receive the following

  ```
  begin\n
  OK\n
  script output (zero or more lines depending on the output commands in
  script, all lines start with >)
  end\n
  ```

- you can also receive an error when an unrecognized command is found or the script is interrupted/stopped, the error contains the line where the problem was found or the script was stopped:

  ```
  begin\n
  ERROR\n
  error line\n
  script output
  end\n
  ```

- close the socket, you can now repeat this procedure if necessary

12.1.1 Java script code example

```
/*  Java script code example:
 Returns the names of the first eight sources of the module */

import java.io.*;
import java.net.*;


public class scriptTest
{
 public static void main(String args[])
 {
     try
     {
          /* Connect to script server */
          Socket socket=new Socket("150.158.196.151",6767);
          InputStream istream=socket.getInputStream();
          OutputStream ostream=socket.getOutputStream()
          InputStreamReader input=newInputStreamReader(istream);
          OutputStreamWriter output=new OutputStreamWriter(ostream);
          BufferedReader reader=new BufferedReader(input);
          BufferedWriter writer=new BufferedWriter(output);

          /* Send the script */
          writer.write("begin\n");
          writer.write("module this\n");
          writer.write("getsetup this\n");
          writer.write("expr set count 0\n");
          writer.write(":loop\n");
          writer.write("source count\n");
          writer.write("getsource \"name\" name\n");
          writer.write("output name\n");
          writer.write("expr + count count 1\n");
          writer.write("expr < test count 8\n");
          writer.write("goto test loop\n");
          writer.write("end\n");
          writer.flush();

          /* Read the result */
          String buf;
          buf=reader.readLine(); /* Should be "begin" */
          buf=reader.readLine(); /* Should be "OK" */

          /* Read names until "end" */
          while ((buf=reader.readLine())!=null&&buf.compareTo("end")!=0)
          {
               buf=buf.substring(1); /* remove > */
               System.out.println(buf);
          }

          /* Close the connection */
          socket.close();
     }
     catch (Exception e)
     {
          System.out.println("Exception!");
     }
 }
}
```

12.2 Definition of script syntax

Commenting lines in your script can be done with a **semicolon** `;` . For instance:

```
; Put the name of module in variable this
module this
```

Labels can be defined with a **:** followed by the name of the label, e.g. `:label`. Each label can be used only once (unique position in script).

Variables do not have to be declared. All variables are stored as strings but you can use the content of a variable for arithmetic operations or as a boolean. Do not use more variables than necessary (performance). Variable names can contain letters, digits and the underscore: e.g. `counter_1`.

String constants have to be defined this way: `"constant"`, e.g. **`"hydra"`**.

Number constants consist of an optional minus sign and digits. Only integer constants are supported (with a 32 bit range). Booleans are also defined as number constants: zero means false and not zero means true.

Instructions/commands have the following structure :

`command [subcommand]` `par1 par2 ... parN`

The first parameter is usually the result variable if a result is returned.

The well-known `if / then / else`, `case / switch`, `for`, `while` or `repeat` constructs are not available. All these constructs can be however replaced by the usage of labels and conditional `jumps/gotos`. Procedures and functions are also not available in the traditional way. Arrays are not available, but there are lists instead.

12.2.1 Examples of replacements

Example of replacing for (or while or repeat):

C code

```
for (counter=0;counter<8;counter++) sum+=counter;
```

Script code

```
expr set counter 0

:for
expr >= test counter 8
goto test done
expr + sum sum counter
expr + counter counter 1
goto 1 for

:done
```

Example of replacing if / then / else:

C code

```
if (counter == 8) counter = 0; else counter++;
```

Script code

```
expr = test counter 8
goto test equal

:notequal
expr + counter counter 1
goto 1 endif

:equal
expr set counter 0

:endif
```

Example of replacing switch / case:

C code

```
switch (number)
{
case 0:  result = 10;
    break;
case 3:  break;
default: result = -1;
}
```

Script code

```
:case0
expr <> test number 0
goto test case3
expr set result 10
goto 1 done

:case3
expr <> test number 3 OR  expr = test number 3
goto test default         goto test done
goto 1 done

:default
expr set result -1

:done
```

Example of replacing arrays:

C code

```
int array[5];
int value;

for (counter=0;counter<5;counter++)
 array[counter]=counter;

value=array[3];
```

Script code

```
list init array
expr set counter 0

:for
list + array array counter
expr + counter counter 1
expr < test counter 5
goto test for

list get value 3
```

Example of using pointers / references:

C code

```
int a=5;       /* a will now contain 5 */
int* b=&a;
*b=10;     /* a will now contain 10 */
```

Script code

```
expr set a 5     ; a will now contain 5
expr ptr b "a"
expr set b 10    ; a will now contain 10
```

Example of using subroutines to replace functions / procedures:

```
:main
expr set squareparam 5
expr ptr squareresult "answer"
gosub 1 square
output answer
return

; Calculate square
:square
expr * squareresult squareparam squareparam
return
```

12.2.2 Description of script commands

expr

```
expr operation result [par1] [par2]
```

The following operations are available:

Operation	Description
set	put par1 in result
+	put par1 + par2 in result
-	put par1 – par2 in result
*****	put par1 x par2 in result
/	put par1 / par2 in result
mod	put remainder of par1 / par2 in result
and	put par1 and par2 (booleans) in result (boolean)
or	put par1 or par2 (booleans) in result (boolean)
not	put not par1 (boolean) in result (boolean)
random	put random value between 0 and par1 in result
=	put par1 = par2 in result (boolean)
<>	put par1 <> par2 in result (boolean)
<	put par1 < par2 in result (boolean)
<=	put par1 <= par2 in result (boolean)
>	put par1 > par2 in result (boolean)
>=	put par1 >= par2 in result (boolean)
ptr	put a reference/pointer to par1 in result (now you can use variable result to reference variable par1), e.g. `expr ptr var1p "var1"` (quotes are necessary !) now you can also use var1p to address var1

Table 12-1
Operations of expr command

string

```
string operation result [par1] [par2] [par3]
```

The following operations are available:

Operation	Description
set	put string par1 in string result
+	put strings par1 + par2 in string result (concat)
cut	put substring of par1 with start position par2 (0 - length minus one) and end position par3 (0 - length minus one) in string result
length	put length of string par1 in result
=, <>, <, <=, >, >=	same purpose as with expr, but now for strings instead of numbers
boolean	put true or false in result depending of the boolean in par1 (to get a boolean result from a boolean string par1 do the following: `string = result par1 "true"` or `string <> result par1 "false"`)

Table 12-2
Operations of string command

list

```
list operation result [par1] [par2]
```

The following operations are available:

Operation	Description
init	create a new list in result
+	concat lists in par1 and par2 in list result, concat list in par1 with element par2 in list result
get	get element par2 (index from 0 to number of elements minus one) of list in par1 in result
total	get total number of elements in list par1 in result

Table 12-3
Operations of list command

goto

```
goto condition label
```

Jump to label if boolean condition is true.

gosub

```
gosub condition label
```

Jump to (subroutine) label if boolean condition is true.

return

```
return
```

Return from a gosub or stop script if used in main.

sleep

```
sleep seconds:
```

Wait a number of seconds.

date

```
date day month year
```

Get date in day, month and year (4 digits).

time

```
time hour min sec
```

Get time in hour, min and sec.

timer

```
timer seconds
```

Get time in seconds (can be used to create sleep).

output

```
output string
```

Add string to script output (after execution).

message

```
message string
```

Send script message string (while execution).

halt

```
halt module
```

Halt module with name module.

reboot

```
reboot module
```

Reboot module with name module.

module

```
module name
```

Get the name of the module running this script.

wall

```
wall list
```

Get a list (see list command) with all the modules in this wall.

load

```
load layout
```

Load stored layout (e.g. brochure) into work layout.

empty

```
empty
```

Make work layout empty.

active

```
active module
```

Get active layout on module in work layout.

update

```
update module
```

Update work layout to module.

total

```
total total
```

Get total number of objects in work layout.

select

```
select number
```

Select object (0 - total minus one) in work layout, necessary for some of the following commands.

selectname

```
selectname name
```

Select the first object with this name in work layout.

type

type

Get type of currently selected object, the possible types are: General, Object, Video, Audio, Logo, Clock, Timer, Viewer and Application.

set

set attribute value

Set attribute of selected object to value in work layout, see section 12.2.4 Description of object attributes (Layouts).

get

get attribute value

Get attribute of selected object in work layout, see section 12.2.4 Description of object attributes (Layouts).

front

front

Put currently selected object in work layout to the front.

back

back

Put currently selected object in work layout to the back.

getsetup

getsetup module

Get the source setup for module to work setup.

setsetup

setsetup module

Setup the source setup of module with the work setup .

source

source source (or **selectsource**)

Select work source (0-29).

setsource

setsource attribute value

Set attribute of work source to value in work setup, see section 12.2.3 Description of source attributes (sources.cfg).

getsource

getsource attribute value

Get attribute of work source in work setup, see source attributes for the source attribute names.

setsourcename

setsourcename module source name

Set name of source for module.

settally

`settally` `module source tally state`

Set tally (0-2) of source (0-29) of module to state (boolean). This is only available for software tallies.

state

`state` `module`

Get current state of module (tallies and errors), do this before you use the **tally** and **error** commands.

tally

`tally` `value tally` (or **`gettally`**)

Get tally (0-2) for work source (hardware or software according to configuration of each source).

error

`error` `error` (or **`geterror`**)

Get error state (boolean) for work source (when one of the enabled alarms of a source is active error will be true).

12.2.3 Description of source attributes (sources.cfg)

Attribute	Description
name	name of source (e.g. “Video1”)
freeze	boolean with freeze state (all booleans are a “true” or “false” string, not a value 0 or not 0 !)
standard	source standard (e.g. PALAuto, NTSC, SECAM, PALM)
type	source type (0: default, 1: SVHS)
deinterlace	boolean with deinterlace state
black, bright, contrast, satsinhue, satcoshue, horstart, horwidth, evenstart, oddstart, verwidth	video setup parameters
embedded	embedded audio (boolean)
group	group for embedded audio (0-3)
channel0 ... channel15	channel number for this audio position (-1: no channel, 0-3 available audio sources for embedded audio, 0-111 available audio sources for non embedded audio)
modetally0 ... modetally2	tally mode, 0: hardware or 1: software
alarm*alarmname*	alarm configuration for alarm *alarmname*
alarm*alarmname*param*n*	extra parameter *n* (1-9) for alarm *alarmname* (for instance level for videoblack, videowhite and videofreeze alarms)

Table 12-4
Source attributes

alarmname can be for instance:

- videoloss
- videofreeze, videoblack, videowhite
- videotrs, videolock, videohorlock
- videolumaoverflow, videochromaoverflow
- audioloss, audiolock
- tally1, tally2, tally3

See source alarms in section 7.1.3 Video errors and 7.1.1 Audio errors.

The alarm is specified by a parameter containing three numbers, e.g. **15 0 5**. The first number contains the alarm flags, the second number is the number of seconds before the alarm is activated and the third number is the number of seconds before alarm is auto cleared.

The alarm bit flags are:

Bit flag	Alarm
1	enabled
2	auto clear
4	show in alarm list (GUI)
8	show in objects (blinking border)
16	send email message
32	send SNMP trap
64	log alarm in log file

Table 12-5
Bit flags for alarms

12.2.4 Description of object attributes (Layouts)

General

General layout properties:

Attribute	Description
resx	resolution width
resy	resolution height
backcolor	background color (e.g. black, blue2, red3, white, yellow)
bitmap	use background bitmap (boolean, “true” or “false”)
bitmapstyle	center, tile, scale
bitmapname	filename of bitmap

Table 12-6
General object attributes

Object

Empty object (also present in the following objects!):

Attribute	Description
name	name of object (e.g. “Video1”)
left	x position of object (0 – (horizontal resolution of the display - **width**))
top	y position of object (0 – (vertical resolution of the display- **height**))
width	width of object (0 – horizontal resolution of the display)
height	height of object (0 – vertical resolution of the display)
aspect	aspect ratio of object (none, 4/3 or 16/9)
transparent	transparent on video objects (boolean)
visible	visible (boolean)
borderon	border on (boolean)
borderwidth	width of border (1-25)
bordercolor	color of border
borderstyle	plain or 3D
umdon	UMD visible (boolean)
umdusetext	use source name (false) or umdtext line one (true)
umdusetext2	two (true) or one (false) line UMD
umdtext	text for UMD line one
umdtext2	text for UMD line two
umdfont	font for UMD (e.g. 5x7, 8x13, 12x24)
umdposition	UMD text position (top left, top center, top right, bottom left, bottom center, bottom right)
umdinside	UMD inside (boolean)
umdsplitted	splitted 2 lines UMD enabled (boolean)
umdseparator	separator line enabled (boolean)
umdsepcolor	separator line color of UMD
umdforecolor	foreground color of UMD
umdbackcolor	background color of UMD

Table 12-7
Empty object attributes

Video

Video object specific:

Attribute	Description
source	source number (0-29)
translevel	level of transparency (0, 50 or 100)
scramble	enable scrambling (boolean)
scramblelevel	level of scrambling (0,10,...,90,100)
tallyon	show tallies (boolean)
tallypos	UMD or border
tallystyle	red - red, green - green, red - green, green – red
audioon	show audio bars (boolean)
audioscale	BBC PPM, Nordic, VU, DIN
audioplain	plain bars (true) or with scales (false)
barwidth	width of audio bars (1-25)
erroron	show alarms in this object (boolean)
errorcolor	second color when blinking

Table 12-8
Video object attributes

Audio

Audio object specific:

Attribute	Description
audiosource	audio source (0-29)
backcolor	background color
barwidth	width of audio bars (1-25)
audioscale	BBC PPM, Nordic, VU, DIN
audioplain	plain bars (true) or with scales (false)

Table 12-9
Audio object attributes

Logo

Logo object specific:

Attribute	Description
bitmap	filename of bitmap
animated	animation (boolean)

Table 12-10
Logo object attributes

Clock

Clock object specific:

Attribute	Description
digital	digital (true) or analog clock (false)
twelve	12 hours (true) or 24 hours (false) digital clock
offseth	offset for hours (e.g. -8 or 5)
backcolor	background color
forecolor	foreground color

Table 12-11
Clock object attributes

Timer

Timer object specific:

Attribute	Description
backcolor	background color
forecolor	foreground color
today	destination time is today (true) or tomorrow (false)
stopH	hours of destination time
stopM	minutes of destination time
stopS	seconds of destination time

Table 12-12
Timer object attributes

Viewer

Viewer object specific:

Attribute	Description
address	address of machine to view
scaling	apply scaling (boolean)
filtering	apply filtering (boolean)
blackwhite	apply black and white filtering (boolean)

Table 12-13
Viewer object attributes

Application

Application object specific:

Attribute	Description
command	application command line (e.g. oclock -bg blue -fg white)

Table 12-14
Application object attributes

12.3 Some example scripts

12.3.1 Aspect script

Set aspect ratio of video windows according to tally status

```
module module

:loop
active module
state module
total total
expr set c 0
expr set ok 1

:check
select c
type type
string <> test type "Video"
goto test cont

get "source" source
get "width" width
get "aspect" aspect

source source
tally test 0
goto test 16by9
:4by3
string set newaspect "4/3"
expr * width width 3
expr / width width 4
goto 1 cont2
:16by9
string set newaspect "16/9"
expr * width width 9
expr / width width 16
:cont2
set "height" width

string = test aspect newaspect
goto test cont

set "aspect" newaspect
expr set ok 0

:cont
expr + c c 1
expr < test c total
goto test check

goto ok noupdate
update module

:noupdate
sleep 3
goto 1 loop
```

12.3.2 Fullscreen script

Show first source without error fullscreen

```
module this
load "full"

:loop
state this
expr set source 0

:loop2
source source
error test
expr = test test 0
goto test cont
expr + source source 1
expr < test source 30
goto test loop2

:cont
select 1
set "source" source
set "umdtext" source
update this
sleep 1
goto 1 loop
```

12.3.3 List script

Demonstrates some list operations

```
list init list
list + list list "hello"
list + list list "world"
output list
list init list2
list + list2 list2 "A"
list + list2 list2 "B"
list + list2 list2 "C"
output list2
list + list list list2
output list

list total c list
output c
:loop
expr - c c 1
list get res list c
message res
expr > test c 0
goto test loop
```

12.3.4 Update script

Scenario written with a script

```
list init l
list + l l "2x2"
list + l l "4x4"
list + l l "audio"
list + l l "audio2"
list + l l "audio3"
list + l l "audio4"
list + l l "background"
list + l l "brochure"
list + l l "clock"
list + l l "clock2"
list + l l "clock3"
list + l l "clock4"
list + l l "clock5"
list + 1 1 "pictinpict"
list + l l "scramble"
list + 1 1 "video"
list + 1 1 "video2"

list total tot l
expr set c 0
expr set i 0
module module
message "start"

:show
list get name l c
expr + c c 1
expr < test c tot
goto test cont
expr set c 0
expr + i i 1
message i

:cont
load name
update module
sleep 15
goto 1 show
```

12.3.5 Window script

Changing window position

```
load "windowtest"
module module

expr set dirx -1
expr set diry -1
gosub 1 randx
gosub 1 randy

select 1
expr set resx 1023
get "width" width
expr - resx resx width
expr set resy 767
get "height" height
expr - resy resy height
```

```
:loop
select 1

get "left" left
expr + left left dirx
expr >= test left 0
goto test x1cont
gosub 1 randx
expr set left 0
goto 1 x2cont
:x1cont
expr <= test left resx
goto test x2cont
gosub 1 randx
expr set left resx
:x2cont
set "left" left

get "top" top
expr + top top diry
expr >= test top 0
goto test y1cont
gosub 1 randy
expr set top 0
goto 1 y2cont
:y1cont
expr <= test top resy
goto test y2cont
gosub 1 randy
expr set top resy
:y2cont
set "top" top

update module
expr set c 0
:wait
expr + c c 1
expr < test c 5000
goto test wait
goto 1 loop

:randx
expr random r 5
expr + r r 1
expr < test dirx 0
goto test randxc
expr - dirx 0 r
return
:randxc
expr set dirx r
return

:randy
expr random r 5
expr + r r 1
expr < test diry 0
goto test randyc
expr - diry 0 r
return
:randyc
expr set diry r
return
```

12.3.6 UMD script

Adjusting layout UMDs

```
module this
expr set count 0
expr set count2 0
string set line "-"

:loop
active this
total t

expr set c 1
:loop2
expr >= test c t
goto test cont
select c
set "umdtext" count
set "umdtext2" line
expr + c c 1
goto 1 loop2

:cont
expr + count count 1
expr + count2 count2 count
string + line line "-"
string length len line
expr <= test len 5
goto test cont2
string set line "-"

:cont2
update this
sleep 1
goto 1 loop
```

12.3.7 Tally script

Using tallies

```
string set modulename "Module"
settally modulename 0 0 1
settally modulename 0 1 0
settally modulename 0 2 1

state modulename
source 0
tally t1 0
tally t2 1
tally t3 2
error e

output t1
output t2
output t3
output e
```

12.3.8 Source script

Changing source names

```
; Set all source names
getsetup "Module"
expr set count 0

:loop
source count
expr + count count 1
string set name "Source"
string + name name count
setsource "name" name
expr < test count 30
goto test loop

setsetup "Module"
```

12.3.9 String script

Demonstrates some string operations

```
string set text "hello world!"
output text

string cut hello text 0 4
string cut world text 6 10

string set new world
string + new new " "
string + new new hello
string + new new "."
string length len new
string + new new " ("
string + new new len
string + new new ")"
output new

string = bool len 12
string boolean sbool bool
string = bool2 sbool "true"
string set text bool
string + text text ","
string + text text sbool
string + text text ","
string + text text bool2
output text
```

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